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THE CATTLE INDUSTRY AND THE TARIFF

BY

LYNN RAMSAY EDMINSTER

WITH THE AID OF THE COUNCIL AND STAFF
OF THE INSTITUTE OF ECONOMICS

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DIRECTOR'S PREFACE

To the people of the United States international commercial policies constitute, at the present time, a subject of unusual interest. Within the last decade an entirely new set of economic relationships between this country and the rest of the world has been created. Certain old questions have reappeared in new aspects and with changed implications. The tariff, as the most important expression of trade policy of this country, deserves renewed attention. Consequently, the Institute of Economics has undertaken an analysis of the entire American system of customs duties.

Before attempting any broad generalizations regarding the wisdom of American tariff policy as a whole, the Institute will first present a series of special investigations dealing with the relation of the tariff to particular lines of production in the United States. The tariff is not a single problem to be solved by the application of any one general formula. With reference to each particular industry it gives rise to a variety of concrete questions of public policy. There has been an abundance of abstract theorizing in the United States about the principles of protection and free trade and there has been no dearth of statistical data submitted

by interested parties. But unfortunately, there has been very little effort toward dispassionate investigation of the concrete effects of particular tariff duties from the point of view of the public welfare.

In these studies of special commodities, answers are given to the questions: Have the duties imposed accomplished the purposes intended? What is the present situation with respect to the burdens and benefits of the tariff? What would be the probable effects upon the industry and upon the public of a change in the rate? A conclusion is then reached in the light of the available evidence.

In all matters except the conclusion the study need make no reference to general tariff policy. Each specific case can be studied simply on its own merits. In some cases even the conclusion may be arrived at without giving consideration to general principles of tariff policy. The facts may point so clearly to the futility or to the ill effects of a duty that its removal appears desirable from any point of view. In other cases, however, some balancing of conflicting national policies can not be escaped. The study will show that the duty has certain definite effects. It may bring a pecuniary benefit to some interests and a pecuniary burden to others. It may be indicative of a trend towards national self-sufficiency and insularity on the one hand, or towards increasing international interdependence on the other. It may promote a diversification of industry but at considerable economic cost.

Under such conditions different individuals might well reach different conclusions. For example, suppose the study shows a pecuniary gain to one class purchased at the expense of a greater pecuniary loss to another. A person may be convinced that good national policy calls for the assistance of the benefited class even at that cost. Suppose that the study shows that the duty will greatly expand an important domestic industry, but at the cost of diverting labor and capital from channels in which they might be more effectively employed. To some minds such expansion may seem well worth the cost. Suppose that the study shows that the removal of the duty will cause considerable disturbance to existing business, and considerable loss to the laborers and investors concerned. Some persons may nevertheless feel that the ultimate public good justifies the incidental disturbance and loss. The conclusion reached in each study put out by the Institute has been arrived at by men of different points of view after thorough discussion both of the evidence adduced in the specific case and of the ends sought. It is perhaps too much to expect that all readers will accept this conclusion. But if the study has put before the reader all the pertinent facts in the case and the reasons on which the findings are based, and has thereby so clarified the whole situation in his mind as to enable him to form an intelligent judgment of his own, it will have amply justified itself.

The present study of the duties on cattle and

beef is the third of a series dealing with agricultural commodities. This particular group of commodities has been selected not only because of its economic importance but because it best illustrates the wide diversity of considerations that must be weighed before appraising our general tariff policy. Amongst the several branches of agriculture the cattle industry has been chosen, partly because of its economic importance, but also because it has reached a stage which makes peculiarly timely an analysis of its relation to the tariff. Previous commodity studies have dealt with sugar and wool. Others will deal with animal and vegetable oils, cotton, and wheat. They will be followed by a general discussion of the effects of the tariff upon American agriculture as a whole. The conclusions of the present study will be found on pages 264–7.

HAROLD G. MOULTON,
Director.

Institute of Economics,
March, 1926

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LYNN RAMSAY EDMINSTER.

Washington, D. C.,
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THE CATTLE INDUSTRY AND THE TARIFF

CHAPTER I

INTRODUCTION

By the Tariff Act of May 27, 1921, cattle and beef, which had long been dutiable until the tariff was removed in 1913, were restored to the dutiable list. By the Act of September 21, 1922, the duties were further increased. In the first of these recent acts a duty of 30 per cent ad valorem was levied on cattle, a duty of 2 cents a pound on fresh beef and veal. In the second, the act now in effect, the duty on cattle was increased to 1½ cents a pound on animals weighing less than 1050 pounds, and 2 cents a pound on those weighing 1050 pounds and over, these rates having been equivalent to about 33 and 43 per cent ad valorem on the two respective classes of animals up to the end of 1925; while the duty on fresh beef and veal was increased to 3 cents a pound.

I. PUBLIC INTEREST IN THE CATTLE INDUSTRY

So marked an increase in the rates of duty on an important food after seven and a half years of free trade is naturally a matter of public concern. But the subject assumes a special interest by reason

of a peculiar conjuncture of fundamental and of transient conditions in this industry.

First, as to the fundamental conditions. During the past two decades the United States has been steadily losing its position as an exporter of certain staple food products, beef among them. So rapid, indeed, was the decline in our beef exports during the decade before the World War that by 1913 our net exportable surplus (including the beef equivalent of live animals), which earlier in the decade amounted to nearly three-quarters of a billion pounds annually, had completely disappeared. Under the stimulus of war conditions a large net surplus reappeared for a few years; but exports have again receded to a point where they are now exceeded by our very limited imports. In these circumstances duties on cattle and beef which afforded only nominal protection so long as the country remained on a heavy export basis should now begin to have some effect on domestic prices. We are, therefore, at the crossroads with respect to a tariff on these products. Shall we deliberately set about to attract more capital into the cattle industry — or else to prevent its withdrawal by reason of diminishing profit — by maintaining duties on cattle and beef? Or shall we permit consumers to draw freely upon foreign sources of supply for their increasing future needs? It need scarcely be said that the issue is one which must be decided promptly if we are to avoid the complications introduced by the cumulative effects of the tariff itself.

But it is the more transient conditions wrought by the World War that have served especially to direct public attention to the tariff as it affects the cattle industry. The industry has only within the past year emerged from a severe depression which began in the latter part of 1920 and in some parts of the country, notably the Range States, remained acute until well into 1925. Excessive extension of credit during the war and subsequent further extensions necessitated by severe droughts in the West and Southwest had rendered the cattle industry peculiarly vulnerable to the effects of the rapid decline of prices which set in late in 1920. For nearly five years thereafter the industry in the West and Southwest was in process of liquidation, during which time heavy losses were incurred by borrowers, lenders, and others dependent on the industry. The depression persisted despite the efforts of the government to provide relief through more liberal credit facilities, through the tariff, and in other ways. The cattle industry was the very first to which the Agricultural Commission appointed by the President in the fall of 1924 gave its attention. Though the real crisis is now over, the trying experiences of the past few years, still fresh in the minds of the cattlemen, are likely to affect their attitude toward the tariff for some time to come.

Finally, a study of the tariff in relation to the cattle industry is rendered important because of the conflict of interest which has recently developed

within the industry itself. This arises from the tariff on lean cattle, imports of which come solely from Canada and Mexico. Cattle of this type are the chief marketable product of the domestic range cattle industry; but they are the "raw material" of the Corn Belt cattle-feeders. If, therefore, a tariff on these animals is advantageous to the former, it is also disadvantageous to the latter. The duties imposed since 1921 have tended to bring this conflict of interest into the foreground. Organizations representing cattle-feeders have petitioned the United States Tariff Commission for relief under the flexible provision of the Act of 1922. Still others, representing the western industry, have vigorously opposed any reduction of the duties. It is perhaps noteworthy also that the President's Agricultural Commission (now discontinued), though it postponed specific recommendations on the tariff, plainly showed in its preliminary report (issued in January, 1925) a disposition to favor further extension of protection to the cattle industry.

II. PURPOSES OF THIS STUDY

The purposes of this study are:

1. To analyze the relation of the tariff on cattle and beef to the present and future interests of producers and of the tax-paying and consuming public.

2. To show what adjustment of the duties seems most in accord with the immediate public interest.

Development of this analysis involves the following questions:

1. How far is the cattle industry at present dependent upon duties designed to afford protection from foreign competition?

2. How far can duties on cattle and beef be made effective in increasing domestic prices, and through increased prices, in stimulating cattle production?

3. What are the real objectives of a tariff on cattle and beef and how far, considering the effects on all interests involved, is the endeavor to attain them compatible with the public welfare?

III. PLAN AND SCOPE

The subject logically divides itself into three parts. Part I deals with the economic structure of the domestic industry and with the present economic position of the industry as it relates to the tariff. The remainder of the study is organized with a view to answering the three questions propounded above. Part II takes up the present competitive situation as regards cattle and beef, with the object of showing how far the cattle industry is at present dependent upon duties designed to afford protection from foreign competition. This involves a preliminary analysis of our foreign trade (Chapter V), which discloses that there are two more or less separate phases of the tariff problem, one relating to live cattle, the other to dressed beef. The remainder of this part of the study deals, therefore, with these two phases of the competitive situation. There still remain the questions: how far can the tariff be made effective in stimulating prices and

output; and how far will the endeavor to achieve these ends accord with the public interest? This discussion of the future efficacy and the public expediency of the cattle and beef duties constitutes Part III.

The study is limited in scope to the duties on cattle and beef. Beef is not, of course, the only product of the industry. Other products, among which hides, oleo fats, and tallow are the most important, normally constitute about 20 per cent of the value of the animal. Logically, it would seem proper to include all cattle-products. The only one, however, upon prices of which a tariff could have any effect is hides. Of these we import heavily; and as they constitute around 12 per cent of the value of the animal their omission from the study would seem to be a matter of some importance. But any adequate consideration of the tariff problem in hides would constitute a study in itself. It would raise the question as to whether the increased production of beef necessarily accompanying any increase in the production of hides might not offset through lower beef prices any gain from higher prices of hides. And it would involve a thorough analysis of the effects of a hide duty upon the leather industry and the consuming public. In short, it would exceed the limits of this book.

PART I

THE NATURE AND STATUS OF THE DOMESTIC INDUSTRY

CHAPTER II

THE DOMESTIC INDUSTRY

THE business of producing and distributing beef consists broadly of two main stages of operation, the one agricultural, the other industrial. The agricultural stage consists of the production of the live animal. Within this stage also, since it is in reality a cost to the producer, may be included the marketing of the animal. The industrial stage includes beef-packing and the distribution of the product to the consuming public.

I. THE AGRICULTURAL STAGE

In the United States cattle are raised primarily for beef or for dairy purposes. Both branches of the industry, however, contribute to the supply of beef. Of the one it is the main product; of the other it is a by-product, though an increasingly important one. It is essential at the outset, therefore, that the relation of dairying to beef production and hence to the tariff on cattle and beef be clearly understood.

A. Dairying in Relation to Beef and Veal Production

The chief contribution of the dairy industry to the domestic meat supply arises from the slaughter of veal and of discarded cows. The greater part,

probably 80 per cent,[1] of the veal, and a very substantial part of the beef, produced in the United States come from the dairy industry. The beef and veal yielded as a by-product of dairying are together estimated by the U. S. Tariff Commission at between 1½ and 2 billion pounds annually, or about one-fourth of the total production.[2] Moreover, the supply available from this source has been increasing both absolutely and relatively to that derived from beef animals.

The relative quantities of beef derived annually from the two branches of the industry cannot be precisely stated, but the situation is reflected with sufficient accuracy in the number of head of cattle in each branch of the industry, as indicated by census data.[3] Thus, between 1900 and 1924 the number of dairy cattle *increased* by 26 per cent, that is, from 27,400,000 head to 34,400,000 head,

[1] U. S. Department of Agriculture, *Yearbook*, 1922 p. 338; see also U. S. Tariff Commission, *Cattle and Beef in the United States*, 1922, p. 10.

[2] U. S. Tariff Commission, *Cattle and Beef in the United States*, 1922, p. 10. An estimate appearing in the *Yearbook* of the Department of Agriculture for 1922, p. 338, tends further to support these figures. This places the production of carcass beef from dairy cattle at 1,502,450,000 pounds in 1920, which amounts to more than 23 per cent of the total beef production for that year. It places the production of veal from dairy calves in 1920 at 560,647,000 pounds. Clemen, in his recent book on the livestock industry, states that "including all markets, the proportion of cattle of dairy blood (received) probably runs around 30 per cent." Clemen, R. A., *The American Livestock and Meat Packing Industry*, p. 256.

[3] U. S. Department of Agriculture, Circular 241, *Food Animals and Meat Consumption in the United States*, 1924 ed., pp. 2–3.

whereas the number of beef cattle *decreased* by 10 per cent, that, is from 37,500,000 head to 33,800,000 head. The contrast would have been still more striking but for the carry-over from the great increase in the beef cattle herds during the war. Between 1900 and 1914, the number of dairy cattle increased by 8 per cent, while the number of beef cattle declined by 38 per cent.

The production of beef and veal as by-products of the dairy industry and the increasing importance of this industry as a source of beef supply have a special significance here, since they point to an increasing supply of meat from this source irrespective of the tariff on beef. Expansion of the dairy industry with the growth of population is inevitable. It is, of course, possible that the tariff on certain dairy products may to some extent affect the rapidity of this expansion. Of butter and cheese — dairy products sufficiently non-perishable to enter extensively into international trade[4] — we are now importing considerably more than we export, though the quantities are extremely small compared with the domestic output. Of some varieties of these the tariff may somewhat increase the domestic price even under present conditions; and in time it may substantially raise the general level of domestic prices of both these products, though here we are on uncertain ground. But whether or not there shall

[4] Another dairy product entering extensively into international trade is condensed milk; but as we produce a large exportable surplus of this, the tariff cannot affect the domestic price.

continue to be duties on dairy products or on beef, the domestic dairy industry is certain to expand.

It is true that the beef derived from pure dairy animals is of poorer quality than that derived from beef animals, and hence that the increase in the number of these animals assures an increasing supply of beef only of inferior quality.[5] This applies, however, only to pure-bred dairy animals. There is, in addition, a large amount of beef derived from animals used jointly for beef and dairy purposes — so-called "dual purpose" stock. Beef derived from this source may be of fairly good quality. Indeed, many of the so-called "dual purpose" cows are in reality of the beef type and are used for milk production by reason of special conditions, sometimes temporary (as during the recent depression), which render this type of dairying profitable. Where beef is thus produced as a joint-product rather than as a by-product of dairying it naturally follows that the price which it commands — hence the effect on price which duties on cattle and beef may have — is a matter of greater importance than is the case where the herds are maintained exclusively for dairy purposes. The point here, however, is that, irrespective of the tariff, a steady increase in our beef production either as a by-product or a joint-product of the dairy industry is to be expected.

Finally, it remains to note the relation of dairying

[5] For a description of the quality and uses of beef yielded as a by-product of dairying, see U. S. Department of Agriculture, *Yearbook*, 1922, pp. 338–9.

to the tariff on veal. Veal is to be regarded as a by-product of dairying. As such it enters into interstate commerce relatively far less than do other meats. Nearly two-thirds of the domestic output is killed in slaughter-houses not subject to Federal inspection and hence can enter only into local consumption. Moreover, imports are negligible. They consist almost exclusively of a small border trade in live calves. In these circumstances it is clear that the duty on veal presents no tariff problem, since production depends, not upon the tariff on veal, but upon the growth of the dairy industry. Only incidental reference need, therefore, be made to this product in the present study.

B. The Beef Cattle Industry

The main beef cattle regions of the United States are the Western Range and the Corn Belt. Cattle are produced more or less extensively throughout the entire country, but these are the great surplus areas. The Western Range includes, broadly, the states of Montana, Wyoming, Colorado, New Mexico, and all the states further west, together with Texas, Oklahoma, and the western portions of Kansas, Nebraska, and the Dakotas. The Corn Belt includes primarily Iowa, Illinois, Indiana, Missouri, western Ohio and the eastern portions of Kansas and Nebraska.

Classified according to the conditions of production, the country may be divided into four great areas: (1) the Western Range, as above noted,

which is mostly semi-arid and is devoted primarily to breeding and grazing; (2) the Corn Belt, which besides raising native animals on a large scale, engages extensively in fattening both native and Western animals; (3) the Appalachian and the Great Lakes regions, including the Middle and Northern Atlantic States, New England, Michigan, Wisconsin and most of Minnesota, in which "dual-purpose" herds predominate and in which the cattle shipped to market are mostly grass-fed; (4) the Cotton Belt and the sub-tropical Gulf region to the south of it, in which cattle are grazed on wooded or other untilled land or on cut-over pine lands, and in which the production of animals of good quality has been greatly hampered by semi-tropical pests, notably the cattle-tick. Approximately 40 per cent of the beef cattle of the United States are located in the Western Range region, 35 per cent in the Corn Belt, 15 per cent in the Cotton Belt and the Sub-tropical Coast, and 10 per cent in the Appalachian and Great Lakes region.[6]

There are two main systems of management in the beef cattle industry. The first is the extensive or pastoral system, such as prevails on the Western Range; the second is the intensive system, such as prevails in the Corn Belt. So far as concerns the raising of cattle, the two systems are at present of about equal importance. This is shown by the fact that of the total number of hides tanned each year, one-half are from branded cattle, that is, from

[6]U. S. Department of Agriculture, *Yearbook*, 1921, p. 247.

animals originating on the range, where ownership is indicated by branding. In the production of beef, however, the Corn Belt, since it fattens both Western and native animals for market, is the more important.

1. *The range cattle industry.* — The distinguishing characteristic of the pastoral system is the herding of animals on low-priced or free land. Supplementary feeding is reduced to the minimum. On the Central and Northern ranges such feeding is generally essential during the winter, but in the Southwest it is rarely necessary except in periods of drought. With the growing scarcity of cheap grazing land the range industry of the United States has come to be characterized more and more by a seasonal movement of the herds to and from the desirable grazing areas. These latter consist, first, of large areas of mountainous and more or less forested land, chief of which are the National Forests, adapted only to summer grazing; second, of still larger areas of free public range and private holdings, mostly semi-arid, which are more or less adapted to grazing throughout most of the year, but which require, except in the Southwest, some supplementary winter-feeding.

Less than half of the Western Range is privately owned. These private holdings, however, form the nucleus of the range cattle industry. Using them as a base of operations the stockmen are able to eke out their private grazing resources by running their herds upon the public lands. Hence there is

a constant movement of cattle to and from adjoining or convenient free range, and in the spring and fall, to and from the National Forests.

The range cattle industry serves primarily as a source of supply of lean animals for fattening in the Corn Belt. The relatively low cost of feed, which makes possible the economical maintenance of breeding herds and growing animals, adapts this part of the country primarily to the raising rather than to the fattening of cattle. The bulk of the animals shipped from the range are either thin or at best only moderately fleshy. Those too thin or immature for immediate fattening are known as "stockers"; those fit for fattening but not fit for immediate slaughter are known as "feeders."[7] Between the better grades of stockers and the poorer grades of feeders there is no distinct line of demarcation. There is likewise none between the better grades of feeders and animals fit for immediate slaughter. Whether animals in good feeder condition shall be sent immediately to the killers or to the country for further fattening depends upon market conditions. When cattle receipts are light and beef is in good demand, the tendency is for the packers to compete more sharply with the cattle-feeders for these animals. Broadly speaking, however, we may look upon the range branch of the industry primarily as a source of supply of more

[7] These terms have to do with the age and condition of the animal and not with the region where produced. They may be produced either on the farm or on the range.

or less thin animals for cattle feeders in the Corn Belt, with the packers competing for the better grades in varying degrees according to market conditions.

2. *The cattle industry in the Corn Belt.* — It is the fattening of cattle, both native and Western, by intensive feeding methods and usually as a part of mixed farming, which distinguishes the cattle industry in the Corn Belt.[8] The systems of management by which this is accomplished differ in detail. Some farmers raise and fatten beef animals on their own farms; others purchase some or all of their stockers and feeders from the range states or from hilly areas in and around the Corn Belt. Some maintain strictly beef herds, others "dual-purpose" herds. Some specialize in the production of "baby beeves";[9] a much larger number feed more mature animals — mostly animals from 24 to 30 months old. These are all, however, simply variations of an intensive system of beef production in which grain-feeding is usually the outstanding feature.

As a part of mixed farming in the Corn Belt, beef production fits in so well that even under relatively unfavorable market conditions a large supply from this source is assured. In several respects the main-

[8] The breeding and rearing of cattle are, to be sure, an equally important, though less conspicuous, phase of the industry in the Corn Belt; but it is the finishing phase of the industry which tends to distinguish production in this region from that elsewhere.

[9] Young animals about 15 months of age, fattened and slaughtered at this age to meet the growing demand for small cuts of tender, well-finished beef.

tenance of cattle on Corn Belt farms is advantageous. Cattle afford a profitable outlet for roughage and for the natural pasture of the hilly areas. They furnish a ready market for the home-grown surplus of corn and other feeds and hence an alternative to the direct sale of these crops. They are commonly fattened for market in the winter, at a time when farm labor and equipment are not fully employed. They enrich the soil. And they fit in especially well with hog-raising, owing to the fact that when fed in the same lot with hogs their net cost is substantially reduced through the production of pork from partially digested corn voided by them. These advantages are not all, of course, peculiar to beef production. In the main they are gains which accrue from carrying livestock of any sort. But experience has shown that in the Corn Belt it pays, generally speaking, to carry cattle as a part of mixed farming.

Cattle-feeding of an intensive sort is a speculative kind of business. The profit of the cattle-feeder turns largely upon the relation between the cost of feed and the so-called "feeding margin" — this latter referring to the difference between the purchase price and the sale price of his cattle per 100 pounds.[10] The wider the feeding margin and the less the cost of feed the greater his profit. Lean cattle and corn or other feed are his raw materials,

[10] The main profit from cattle-feeding arises, not from the gain in weight itself, but from the increased price per 100 pounds resulting from the improved quality of the entire carcass.

fat cattle his finished product. But lean cattle are also the finished product of the range cattleman. Hence the interests of these two groups tend to conflict — a fact which is of capital importance from a tariff standpoint. The cattle-feeder is interested in the maintenance of a wide feeding margin, hence in relatively low prices of lean cattle; the range cattleman is desirous of obtaining high prices for his lean cattle irrespective of the effect of this upon the feeding margin. Anything that increases the price of his lean animals, therefore, except as it is compensated in the price of his fat animals,[11] is a burden to the cattle-feeder; but by the same token it is a boon to the range cattleman.

The size of the corn crop introduces a further element of speculation into the position of the cattle-feeder. A large crop and a low price tend to encourage cattle-feeding, a short crop and a high price to discourage it. But low corn prices are not necessarily clear gain to feeders, for they also stimulate the production of hogs. The tendency is for a large corn crop to be followed by increased pork production, lower pork prices and hence, owing to the interchangeability of beef and pork, lower beef prices. Thus what the cattle-feeder gains from low prices of corn may be partly or wholly offset by the decline in the price of fat cattle and beef by reason of increased competition from pork. The conditions are variable and speculative.

[11] Regarding the possibility of obtaining such compensation through the tariff, see what is said in Chapter VI, pp. 104–6.

In the Appalachian Region and the South, the cattle industry is conducted under both systems of management described above. A description of the domestic cattle industry would be incomplete without some reference to the industry as conducted in these regions. In the classification of the cattle industry by regions earlier in this chapter, the Great Lakes and Appalachian areas were included as one region. The latter area is, however, the more important from the standpoint of beef cattle production. There are comparatively few beef cattle in the Great Lakes area, though the number of "dual purpose" animals is increasing. In the Appalachians the system of management varies. The rougher regions are available for extensive grazing of breeding herds; while the rich limestone areas engage intensively in the production of grass-fattened cattle for Eastern markets. In most of the better areas there is a noticeable encroachment of dairying upon beef production; though in some parts of the region the beef cattle industry is holding its own by earlier maturing of its animals.[12]

In the South the system of management likewise varies. On the open prairies and also in the cut-over pine lands of the coastal plain, extensive grazing, somewhat as on the Western Range, prevails; but in the Cotton Belt proper there are commonly only a few cattle on each farm. The industry in the South has for many years been greatly retarded by the cattle-tick. The progress made in

[12] See *Breeder's Gazette*, Sept. 6, 1923, pp. 249–50.

recent years in eradicating the tick has increased production in some regions, especially the Mississippi Valley, and has encouraged hopes of thus diversifying agriculture in the Cotton Belt; but the results have not been such on the whole as to promise any very considerable expansion of the industry in the near future. In the Southeast and on the Gulf Coast, semitropical vegetation, lack of drainage, and lack of interest have retarded tick eradication, and little headway has been made. In the Cotton Belt other forms of diversification have been found more profitable where diversification has actually been attempted. If the boll weevil can be held in check or conquered it is extremely improbable that a cash crop like cotton will be extensively abandoned, at any rate in favor of beef production. The South now produces less than it consumes and seems likely to do so for some time to come.

The cattle industry occupies an important place in the agricultural economy of the different parts of the country. What has been said above relates primarily to the manner in which the industry is conducted under varying local conditions, that is, to the management of the industry. The table on page 22 indicates in a general way the importance of the industry in the agricultural economy of the regions where it exists.

The table has, of course, certain rather obvious limitations. The figures — which are available in full for but a single year — are necessarily only estimates, and in the process of estimating there

RELATION OF INCOME FROM CATTLE TO THE TOTAL FARM INCOME, BY REGIONS, 1924–25*

Region	Total farm income	Income from cattle (sales of live animals only)	*Per cent of total income derived from cattle*
	Millions	*Millions*	
Central Corn States[a]	$2,180.0	$332.0	*15.2*
Wheat Belt[b]	1,249.4	188.5	*15.1*
Northeast Dairy Belt[c]	1,001.8	81.8	*8.2*
Northwest Dairy Belt[d]	997.5	74.0	*7.4*
Tobacco Belt[e]	461.0	47.1	*10.2*
Eastern Cotton Belt[f]	1,246.0	30.3	*2.4*
Western Cotton Belt[g]	1,507.0	84.5	*5.6*
Range States[h]	518.7	76.3	*14.7*
Pacific Coast[i]	715.0	50.5	*7.1*
Total — United States	$9,876.4	$965.0	*9.8*

* Source: *Brookmire Farm Income Bulletins*, Jan. 19 and Apr. 6, 1925. The income figures are estimated sales income. The year 1924–25, dating from July 1, is the only one for which all the data are available.

[a] Ohio, Indiana, Illinois, Iowa, Missouri.

[b] Kansas, Nebraska, South Dakota, North Dakota.

[c] New York, Pennsylvania, New Jersey, and New England.

[d] Minnesota, Wisconsin, Michigan.

[e] Kentucky, Virginia, Maryland, Delaware, West Virginia.

[f] North Carolina, South Carolina, Georgia, Mississippi, Alabama, Tennessee, Florida.

[g] Texas, Oklahoma, Arkansas, Louisiana.

[h] Colorado, Montana, Wyoming, Idaho, Utah, New Mexico, Arizona, Nevada.

[i] Washington, Oregon, California.

is some unavoidable duplication. Thus, for example, the income from sales of lean cattle by the range states is duplicated in the income from the same cattle when resold as finished animals by cattle-

feeders in the Corn Belt.[13] The tendency, therefore, is to exaggerate the importance of the Corn Belt industry as compared with the range industry. Nor is it possible to show statistically the importance of the industry simply as a part of the economic fabric of the community. That is to say, there is no means of measuring the extent to which it supports other more or less dependent enterprises: marketing and financing agencies; railroads and other activities directly associated with the cattle business; merchants, bankers, and others furnishing goods or services to those in the business; and in the farming regions, the contribution of cattle-husbandry to the general farming enterprise. This is an important, though unavoidable, limitation; and it is especially so in communities where the cattle business is almost the sole productive activity. The figures given, however, suffice roughly to indicate the importance of the industry in relation to other agricultural enterprise.

It will be seen that in the Central Corn States, the Wheat Belt, and the Range States the income from cattle in 1924–25 was about 15 per cent of the income from all farm enterprises, whereas, by extreme contrast, it was but 2.4 per cent in the Eastern Cotton Belt. The aggregate income from cattle is much larger in the Central Corn States

[13] Rough calculation of this duplication on the basis of stocker and feeder shipments and estimated farm prices of such animals in 1924 indicates that it was probably somewhere between $150,000,000 and $200,000,000 for the entire country.

than in any other region. The Wheat Belt — due largely to the extent of the industry in Kansas and Nebraska, which lie partly in the Corn Belt — ranks next. Because of the duplication mentioned above, the importance of the industry in these two regions is exaggerated in the table; but even assuming that there is duplication to the extent of half the money receipts from cattle in the Range States and in Texas (the total figure for Texas being $60,000,000), they would still greatly preponderate. So large was their income from other farm enterprises, however, that the direct income from cattle constituted nevertheless but a minor part of their total farm income.

The classification of the country by regions as in this table does not, of course, give an adequate conception of the importance of the industry to particular communities. To some extent this is revealed by figures for the individual states. Thus, Wyoming and Nevada derived between 25 and 30 per cent of their total farm income from cattle; Iowa, Missouri and Nebraska, between 20 and 25 per cent; Kansas, New Mexico, Arizona, and Colorado, between 15 and 20 per cent. In terms of aggregate income, the order of rank was, however, quite different; namely, Iowa, Kansas, Nebraska, Missouri, Illinois, and Texas, with no other state even approaching these. More than half of the total income from cattle for the United States in 1924–25 went to these six states. In these and in other states there are communities where the cattle

business is of dominant importance. In some localities, notably in parts of the Range States, it is almost the exclusive business. Anything, therefore, that tends to maintain or increase prices of cattle is of vital concern to these communities.

There is a strong trend in the domestic cattle industry from the ranch to the farm system of production. Before leaving this account of the domestic beef-cattle industry it remains to note this transition. There are, unfortunately, no satisfactory statistics by which the existence of the trend can be established or its extent measured.[14] That it is actually occurring, however, is a commonplace among those familiar with the industry. It is in fact simply one phase of the whole process of transition from extensive to intensive agriculture which we shall have occasion to treat more fully in the next chapter. Suffice it here to point out that the growth of population and the increasing scarcity of cheap land have checked

[14] The Federal Trade Commission, in its report on the *Meat Packing Industry*, Vol. I, pp. 394-5, cites statistics suggestive of this conclusion; but they do not prove the point. The Commission shows that the number of beef cattle east of the Mississippi River increased, in ratio to the total in the country, from 25.8 per cent in 1900 to 31.3 per cent in 1918, and hence concludes that the geographical trend of the industry, formerly westward, has now become eastward. When the figures are brought up to date, however, and are made to include calves, no such geographical trend is apparent. Moreover, the trend to the farm system cannot be shown by a regional division of cattle census figures, especially by one wherein the Mississippi River is used as a line of demarcation, for the trend is observable west, as well as east, of the Mississippi. Even in the semi-arid parts of the West the general trend is from the pure ranch system to one bearing many of the marks of the farm system.

the production of livestock by extensive methods. Great areas of former range have been cut up into farms on many of which cattle are now carried as a part of mixed farming. In this manner there has been a constant addition in these newer farming areas to the number already carried in the older farming regions.

This transition tends on the whole to lessen the importance of the tariff as a factor in the future maintenance of the cattle industry. For the indirect gains of the sort already noted (see p. 18) make the carrying of additional cattle as a part of mixed farming more economical than would be their production under range conditions.[15] But for this fact the spread of general farming would have affected our beef output much more, even, than has actually been the case. In this manner, artificial price stimulation, whether through the tariff or in some other way, has been rendered just so much less essential for the maintenance of our cattle industry.

C. Cattle Marketing

A full account of marketing methods and problems would have no proper place in this study, but certain features of the marketing organization and process should be understood.

[15] This tendency does not, however, apply uniformly. For many of the range cattlemen the effect of this transition, which has involved the cutting up of the range in consequence of homesteading, has been to increase rather than diminish their dependence upon higher prices by increasing the difficulties under which they operate and by raising their costs of production. For a discussion of these difficulties, see Chapter III, pp. 58–64.

The first feature to be noted is that cattle marketing in the United States is carried on largely through a system of centralized marketing points where also are located extensive slaughtering and packing facilities. There are some 67 markets that are well-established, and from a half to three-fourths of all the cattle marketed in the United States pass through these central points.[16] In the Corn Belt the proportion ranges as high as 85 per cent.[17] Central markets are essential to the slaughter and distribution of beef other than for purely local trade, hence their greater prevalence in such a beef surplus region as the Corn Belt. They likewise serve as depots for the reshipment of lean cattle to the country for fattening, a phase of the industry which likewise predominates in the Corn Belt. Among them, seven are recognized as primary markets and receive the bulk of the shipments; namely, Chicago, Kansas City, Omaha, East St. Louis, St. Joseph, Sioux City, and St. Paul. Among these, Chicago is the ruling market, prices in the others usually reflecting the difference in shipping costs. Kansas City and Omaha are, however, the leading markets for stockers and feeders.

The next feature to be noted is the methods followed in marketing cattle, especially as they relate to the number of hands through which the animals

[16] U. S. Department of Agriculture, *Yearbook*, 1921, p. 278.

[17] U. S. Department of Agriculture, Office of Secretary, Report 109, *Meat Situation in the United States, Part I, Statistics of Livestock, Meat Production and Consumption, Prices, and International Trade for Many Countries*, 1916, p. 10.

pass from farm to slaughter. These vary. As a rule the producer sells directly to a country drover for shipment to central markets, or else ships the animals himself, either individually or through a co-operative shipping association. Other systems are followed,[18] but these are the more important ones. After arrival at the market the stock passes into the hands of the commission man who, as expert salesman for the shipper, sells direct to local packers, or perhaps to "order buyers" representing outside packers, or to "shippers" who buy for shipment to other markets, or to "scalpers" or "dealers" who buy for later resale in the same market.[19] The bulk of the fat stock is sold directly to local packers for immediate slaughter, though the other outlets noted above help to relieve gluts in the market and tend to stimulate competition. Lean animals, however, are more commonly reshipped to the country for fattening. For the conduct of this latter business there are special dealers or traders who buy mixed lots of stockers and feeders and sort them to suit the varying requirements of the cattle-feeders from the country districts. These latter may buy directly from commission firms representing the original owner of the stock, or from a trader, or they may buy indirectly from

[18] These include direct sale to local butchers or to packer-buyers, direct shipment to packing houses, farm-slaughter and sale of the carcass, auction sales, selling on mail orders, and selling on the range to co-operative buyers. U. S. Department of Agriculture, *Yearbook*, 1921, p. 278.

[19] Weld, L. D. H., *The Marketing of Farm Products*, 1920, p. 201.

either source through a commission house.[20] Eventually, of course, the cattle thus purchased reappear in the market as fat stock, and as such are disposed of in the manner above described.

It is thus apparent that cattle change hands, possibly only once, often several times, between production and slaughter. Indeed the number of exchanges may even exceed the maximum above indicated. A case where this occurs is the three-cornered movement of stockers from the breeding grounds of the Southwest directly to the better grasses of the central and northern range and thence to the central markets where they may be sold either to country feeders or to the packers for immediate slaughter — a feature of the cattle trade which has been of some importance in the past.

Lastly, it remains to note the marked seasonal variations of market receipts, slaughter, and prices. First as to receipts and slaughter. The seasonal variations of these are similar in direction but different in degree. Both reach the highest point in the fall, the lowest in the spring; but in the fall receipts greatly exceed slaughter, the excess consisting of animals reshipped to the country for fattening.[21]

[20] Davenport, A. E., *The American Livestock Market and How It Functions*, 1922, pp. 74–8.

[21] A record of receipts at the seven primary markets over a period of seven years showed that 34.6 per cent arrived during the months September to November inclusive, 23.6 per cent during December-February, 19.3 per cent during March-May, and 22.4 per cent during June-August. The corresponding percentages for slaughter were: 29.7, 25.1, 21.2, and 23.9. Clemen, *American Livestock and Meat Industry*, p. 360.

During the entire year about a fifth,[22] and in the fall about half,[23] of the receipts go back to the country. The nature of the receipts varies, however, from season to season. Grass-fed cattle, including large numbers of cows and heifers, predominate in the fall; but throughout the winter the proportion of corn-fed animals tends to increase, and in the spring reaches its highest point. During the summer the proportion of grass-fed animals again increases, many of these coming from the Southwest and from the rich blue grass area of the Appalachian limestone region where the grazing season closes earlier than on the Western Range.

Since the seasonal variations in market receipts are not counterbalanced by seasonal variations in the demand for cattle, it follows that cattle prices must also be seasonal. In general, prices reach their lowest point in the fall with the heavy receipt of grass-fed animals, and their highest point in the spring when, despite receipts of corn-fed animals, there is a tendency to scarcity.[24] True, there is some diversity of seasonal price trends for the different classes of animals.[25] Thus beef steer prices are are usually highest during the late summer, while

[22] U. S. Department of Agriculture, *Yearbook*, 1921, p. 286.

[23] Clemen, *American Livestock and Meat Industry*, p. 575.

[24] To some extent, of course, this seasonal contrast is due to the lower average quality of the animals marketed in the fall than in the spring.

[25] U. S. Department of Agriculture, Office of Secretary, Report No. 113, *Meat Situation in the United States, Part V, Methods and Cost of Marketing Livestock and Meats*, 1916, pp. 64–6.

those of fat cows and heifers, of stockers and feeders, and with less regularity those of "canners" and "cutters,"[26] are usually highest in the late spring. Of all classes in common, however, prices are usually lowest in the autumn. In representing the trend of cattle prices the most common practice has been to regard those of "native beef" cattle[27] as typical of all, since this is the broadest single category of beef animals for which prices are available and tends to dominate prices of other classes.

II. THE INDUSTRIAL STAGE

The remaining links in the chain of operations from the production to the final consumption of the beef consist of the slaughter of the animal and the distribution of the meat.

In 1923 there were 1,397 wholesale meat-packing

[26] "Canners" and "cutters" are inferior animals fit only for boneless cuts, canned and cured meat, or sausage.

[27] The limits of the term "native beef" are not precisely established. A fair idea of what is included in the term appears, however, in Clemen, *American Livestock and Meat Industry*, pp. 611-2, as follows:

"Under the head of native beef cattle are included, first, fed cattle, that is, mostly steers and yearlings, shipped from the Corn Belt regions and from other localized feeding sections, that have been fed more or less grain and shipped in car-lots and are suitable for the production of carcass beef. This head does not cover all cattle of these kinds, but only those which are finished as products of a more or less separate feeding activity. The second class is that of grass cattle, which includes all other steers shipped from pastures within or without the Corn Belt, but not from the western or range sections. These grass cattle move in car-lots, and have not been finished on grain, but are mostly suitable for beef slaughter. Their production is more or less separated from ordinary farm activities."

establishments in the United States, employing some 133,000 persons and turning out products valued at about 2½ billions of dollars. Cattle were, however, a less important source of these products than hogs. Deducting shrinkage (moisture and waste) from the total weight of the live animals slaughtered, it is found that the weight of the hog-products in 1923 was 10,737,000,000 pounds; of the cattle-products, 7,911,000,000 pounds.[28] Of all animal-products, hog-products constituted 52 per cent by weight, beef and veal 44 per cent. Corresponding data as to relative value are not available for 1923; but in 1921 the cost of the cattle and calves slaughtered — the best available guide to relative value of product — was 38 per cent of the cost of all animals, as compared with 57 per cent for hogs.

The nature and relative importance of the various products of the beef-packing industry is indicated in the table on page 33.

It will be seen that meat is by far the most important of these products, but that hides, skins, tallow, and oleo derivatives are important by-products. More than 95 per cent of the beef and veal produced is sold as fresh meat. Approximately 90 per cent of the fresh beef is sold as "chilled" beef, usually at a temperature of from 34 to 38 degrees F.; the remainder is frozen. The difference between the two is important. Freezing beef

[28] Taking 25 per cent of the live weight as the shrinkage for cattle and calves and 15 per cent for hogs. Federal Trade Commission, *The Meat Packing Industry*, Part I, p. 107.

distinctly lowers its quality and prestige; hence even if the original beef were of the same quality,

PRODUCTION OF CATTLE-PRODUCTS IN WHOLESALE ESTABLISHMENTS IN THE UNITED STATES IN 1923*

(In millions)

Product	Quantity	Value
	Pounds	*Dollars*
Fresh beef	4,834.7	607.5
Veal	499.0	71.7
Edible offal[a]	517.8	39.1
Pickled and cured beef	75.1	15.5
Canned goods[a]	95.1	19.7
Sausage, meat puddings, head cheese, scrapple, etc.[a]	803.7	133.1
Oleo oil and oleo stock	170.2	19.5
Other oils	26.1[b]	3.0
Stearin	34.9	3.4
Lard compounds and other substitutes[a]	287.7	37.2
Oleo-margarine[a]	57.3	10.2
Tallow	230.4	17.1
Cattle-hides	579.5	66.0
Calfskins	47.0	7.3

* Census of Manufactures, 1923, *Slaughtering and Meat Packing.*

[a] Derived only in part from cattle. The census figures do not always distinguish cattle-products from other animal-products. Edible offal, canned goods, and sausage, scrapple, etc., are certainly derived in part from pork. Similarly, the oleo fats presumably contain some mutton fat; while such products as lard compounds and substitutes, and oleo-margarine, usually contain very large proportions of vegetable oil. On the other hand, certain products derived in part from cattle have been omitted from the table, such as casings, glue, and soap stock.

[b] The original census figure, given in gallons, is here converted to pounds on the basis of 7.5 pounds per gallon.

the chilled would sell at a price premium. In fact, however, the better grades of beef are rarely frozen

when it can be avoided; and even the freezing of the less desirable qualities is limited in this country to small amounts for marine use, overseas military requirements, and the like. Chilled beef is highly perishable. Hence the extent to which fresh beef will be sold in the chilled form depends on the promptness with which it can be marketed. In the United States, owing to the proximity of the domestic market and to the system of distribution developed by the large packers, quick marketing is possible. For the great exporting countries, however — notably Argentina, Uruguay, and Australia — the distance from foreign markets and the necessity of shipping through torrid seas require that the beef shall be either frozen, or chilled almost to the freezing point.

Dressed beef normally constitutes about 55 per cent of the live weight of the animal, this ratio being known as the "dressing percentage." Other edible products account for a further 5 or 6 per cent, inedible but marketable products for about 10 per cent, and shrinkage through evaporation and loss of valueless material for the remainder. By value the relations are, of course, different. Of the total receipts for all products, meat normally accounts for about 80 per cent, hide for about 12 per cent, oleo fat for 3 per cent, and lesser by-products for the remainder.

The meat packer is primarily a distributor of meat, not a producer. In the entire process of production and distribution of meat the expenses incurred by

the packing industry are but a minor part of the total. In 1921, according to the census, the cost of raw materials, chiefly livestock, constituted approximately 85 per cent of the total value of all products of the packing industry. As regards beef, Swift's *Yearbook* discloses that the expense of slaughter and distribution now amounts to only about one-fifth the cost of the animal and is largely offset by receipts from by-products; further, that between 1915 and 1920 it amounted to only about one-tenth the cost of the animal and from a third to half of the amount received for by-products. In fact, more than half the expenses of the meat part of the packing business are for freight and selling.[29] Thus we may look upon the slaughter and preparation of meat simply as processes preparatory to distributing it in the most convenient form. They are the first stage of a more economical system of distribution than the old one whereby live animals were driven to the great centers of consumption and slaughtered from day to day in accordance with local needs.

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Economies rendered possible in both slaughter and marketing have tended to foster concentration of ownership and control in the packing industry. The first of these economies lies in the more thorough utilization of by-products when operations are conducted on a large scale, for reasons that are obvious. The second relates to the large aggregation of capital

[29] Institute of American Meat Packers, *The Meat Packing Industry*, 1923, p. 81.

essential to the operation of an efficient and modern national marketing system. With the development of artificial refrigeration, the market accessible to the individual packing plant became national, or even international, rather than local. Meat could be shipped long distances under refrigeration. Packing became, therefore, a national as well as a local business. The service of the national companies came to be based on the transportation of the surplus of one section of the country to regions deficient in meat production, and the industry naturally shifted toward the great producing areas.[30] Given adequate marketing facilities, it was cheaper to ship beef long distances in the carcass than on the hoof. Such a system of distribution requires a large capital investment. It involves distribution to the larger cities and towns through branch houses and to the smaller villages by means of peddler cars which periodically cover given routes. It involves, in short, the control of numerous warehouses and of large fleets of refrigerator cars, hence an elaborate and expensive marketing organization. No small company can maintain such a system.

This concentration of industrial control is, moreover, particularly marked in the case of beef. In 1916, according to the Federal Trade Commission,[31] the

[30] The extent of this shift may be seen in the fact that the center of gravity of beef slaughter in the United States is now in western Illinois, whereas the center of consumption is in western Ohio, and of production in central Kansas.

[31] Federal Trade Commission, *The Meat Packing Industry*, Part I, p. 110.

five large establishments[32] in the industry handled 82.4 per cent of the estimated live weight of all cattle slaughtered under federal inspection, that is, slaughtered by firms doing an interstate business; whereas only one other establishment handled as much as 1 per cent. The same five, however, handled only 63.3 per cent of the hogs. Two reasons account for this. The first is the fact that beef and veal are sold almost entirely in the fresh state and hence must be distributed, except locally, by the method explained above, whereas the greater part of the pork is cured. The second is the fact that there is greater opportunity for economy from the thorough utilization of by-products in beef-packing than in pork-packing. This is simply due to the circumstance that cattle by-products, many of them of low value, form a much larger proportion of the total weight of the live animal than do hog-products — roughly, 45 per cent as against 25 per cent. It is not surprising, therefore, that the marked growth during the past few years in the volume of business done by the large independent packers — a development on which much stress is now laid as indicating a tendency to decentralization in the packing industry — has been confined in the main to pork-packing.

A large part of our total beef production still consists,

[32] Armour and Co., Swift and Co., Morris and Co., Wilson and Co., and the Cudahy Packing Co. One of these companies — Morris and Co. — has recently been absorbed by Armours, while another — Wilson and Co. — has gone through receivership.

however, of farm or strictly local slaughter. According to estimates of the Department of Agriculture,[33] almost a third of the entire production is of this sort. The small wholesale slaughterers not only cater to a purely local trade, but they likewise draw their supplies of cattle almost exclusively from their own vicinity. They are thus able to economize in freight charges on both live animals and finished products. They are not able, however, to utilize by-products to the same extent as the large packers, and the radius of their activities is also limited by the lack of marketing facilities such as refrigerator cars. As soon as they attempt to expand their market to neighboring towns, cost of transportation and lack of adequate marketing organization and equipment progressively enhance the disadvantage already inherent in their smaller scale of operations. Hence they compete with the large packers only to a very limited extent.[34]

It is thus apparent that the slaughter and distribution of beef, except for local purposes, is a business requiring a large plant and an elaborate sales organization — much more so than in the case of pork. It is a business which for the most part cannot be entrusted to the independent wholesaler, a business in which there is little room for middle-

[33] U. S. Department of Agriculture, *Meat Production, Consumption and Foreign Trade in the United States, 1907–24* (multigraphed bulletin), p. 3.

[34] Clemen, *American Livestock and Meat Industry*, p. 797; also Armour's Livestock Bureau, *Monthly Letter to Animal Husbandmen*, March, 1922.

men. Fresh beef is perishable. It must be sold quickly, otherwise it will very soon deteriorate and the trade will discriminate against it. Hence it passes directly from the packer to the retailer and thence to the consumer. The efficient conduct of this last stage of the business, that is, retailing, presents problems to which serious attention is now being directed; but an account of the methods and costs of retail distribution would lie beyond the scope of this study.

CHAPTER III

THE PASSING OF OUR NATIONAL BEEF-SURPLUS

Having described in broad outline the organization of the industry, we may now pass to a consideration of its present economic status. As it concerns us here this involves two things. It involves, first, a survey of the significant changes in production, consumption, and trade during the past few decades and of the conditions that are responsible for these changes. It involves, second, some account of the immediate conditions prevailing in the industry by reason of the war and its after-effects. It is with the first aspect of the matter — the long-run as distinguished from the merely transitory — that the present chapter will deal.

During the decade prior to the war a most significant change occurred in the status of the United States as a producer and exporter of beef. Within a short span of years our formerly large exportable surplus of beef virtually disappeared and was succeeded by a net deficit. It will be the purpose of this chapter to show the course of this transition, its causes, the possibilities of checking its further progress, and the bearing of the whole upon the tariff.

I. THE DECLINE IN OUR BEEF PRODUCTION AND CONSUMPTION

Until about 20 years ago the United States produced enough beef for her own needs and in addition an exportable surplus larger than that of any other country. Although exports from the United States had previously declined somewhat, it was not until 1905 that Argentina, whose exports had been rapidly increasing, replaced this country as the leading beef-exporting nation of the world. Even during the succeeding four years, our exports, while declining somewhat, remained large. After 1909, however, the decline became very rapid, and by 1913 imports — which had meanwhile begun to increase but were still small compared with our former exports — actually exceeded exports; that is, when the beef equivalent of the trade in live animals is taken in account. In short, during the decade prior to the war the status of the United States shifted from that of a beef-surplus to that of a beef-deficit country.

The great falling away of our exportable surplus during this period was due not merely to the failure of production to keep pace with the growth of our population but to its failure to increase at all. On the contrary, it actually declined. This decline was, indeed, so marked that in spite of the great decrease in exports and even some increase in imports, our aggregate consumption of beef likewise declined. The decline in production and consumption, it

should be emphasized, was an absolute one. It follows, therefore, that with the growth of population the per capita production and consumption declined even more markedly. This process of transition in our beef industry and trade did not, to be sure, continue uninterruptedly. The war so stimulated the demand for beef at home and abroad that there was a marked revival of both production and exports. For a few years the United States returned to her former position as a beef-surplus country, and the fundamental trend which was in progress before the war was for the time obscured. But in 1920 the balance again shifted in favor of imports — including, of course, the trade in beef equivalent of live animals as well as the trade in dressed beef; and although in 1922 and again in 1925 very slight export balances reappeared — balances smaller than the margin of possible error in calculating them — the period since 1920 has remained on the whole one of net imports. This, briefly, has been the trend during the past twenty years.

The situation above described is revealed in the tables on pages 43 and 46 and the charts on pages 44 and 47. The table on page 43 shows the trend of our production and consumption of beef beginning with 1907. This is the year in which Federal inspection of meat-packing establishments engaged in interstate trade was inaugurated and hence the first year in which reliable statistics of slaughter by firms doing an interstate business became avail-

ESTIMATED ANNUAL PRODUCTION AND CONSUMPTION OF BEEF IN THE UNITED STATES, 1907–1925*

(In millions of pounds, except per capita figures, which are in pounds)

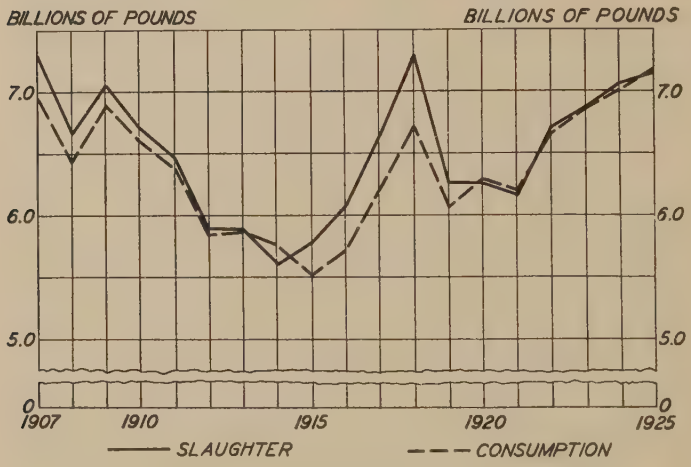
Calendar Year	Slaughter						Foreign Trade			Consumption			
	Total		Federally inspected		All other		Exports of beef[a]	Imports (less re-exports)		Total		Pounds per capita	
	Beef	Veal	Beef	Veal	Beef	Veal		Beef	Veal	Beef	Veal	Beef	Veal
1907	7,302	625	4,319	209	2,983	416	354	..	..	6,948	625	79.5	7.1
1908	6,657	604	3,936	202	2,721	402	228	..	..	6,429	604	72.2	6.8
1909	7,050	683	4,168	229	2,882	454	164	..	..	6,886	683	75.9	7.5
1910	6,712	686	4,033	234	2,679	452	111	..	..	6,601	686	71.5	7.4
1911	6,474	656	3,961	228	2,513	428	91	..	..	6,383	656	68.1	7.0
1912	5,894	667	3,705	238	2,189	429	56	..	..	5,838	667	61.4	7.0
1913	5,887	487	3,569	175	2,318	312	45	35	..	5,877	487	60.9	5.0
1914	5,612	432	3,574	157	2,038	275	93	253	5	5,772	437	58.9	4.4
1915	5,785	427	3,948	167	1,837	260	387	125	1	5,523	428	55.6	4.3
1916	6,082	535	4,326	219	1,756	316	285	23	1	[b]5,728	536	56.8	5.3
1917	6,649	661	5,132	295	1,517	366	365	25	1	[b]6,200	662	60.7	6.5
1918	7,290	764	5,608	351	1,682	413	711	125	1	[b]6,718	765	64.9	7.4
1919	6,255	803	4,746	377	1,509	426	287	53	5	[b]6,057	808	57.7	7.7
1920	6,256	806	4,371	370	1,885	436	155	43	8	[b]6,300	814	59.2	7.6
1921	6,168	747	4,087	366	2,081	381	52	23	4	[b]6,197	751	57.5	7.0
1922	6,710	792	4,573	395	2,137	397	46	32	5	[b]6,665	797	61.0	7.3
1923	6,877	870	4,686	443	2,191	427	42	24	2	[b]6,870	872	62.1	7.9
1924	7,069	931	4,829	499	2,240	432	40	21	4	[b]7,012	935	62.6	8.3
1925	7,146	1,001	4,935	541	2,211	460	39	17	3	[b]7,166	1,004	63.1	8.8

* U. S. Department of Agriculture, Bureau of Animal Industry, *Meat Production, Consumption, and Foreign Trade in the United States, Calendar Years 1907–1925.* (Multigraphed bulletin.)

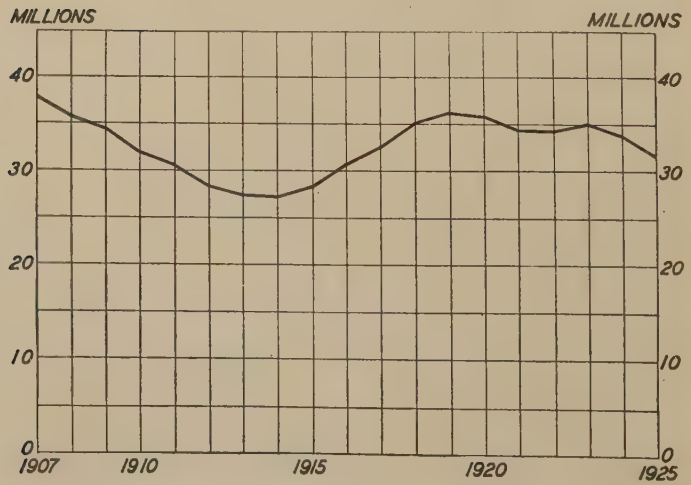
[a] There were no exports of veal.

[b] Includes differences in storage quantities at beginning and end of year.

Beef Slaughter and Consumption in the United States for the Calendar Years, 1907–25



Number of Beef Cattle in the United States, January 1, 1907–January 1, 1925



able as a basis for estimating the entire annual slaughter.[1]

The table on page 43 refers only to dressed beef. It does not show the balance of trade in all beef, on the hoof as well as dressed. This is shown in the table on page 46.

Glancing at the table on page 43 it will be seen that prior to the war the production of both beef and veal was declining. The combined production of the two fell from 7,927,000,000 pounds in 1907 to 6,044,000,000 pounds in 1914, that is, by 24 per cent. For beef the decline was 23 per cent. Since production in 1907 was probably somewhat above normal, and in 1914 was curtailed by reason of a feed shortage, these figures tend to exaggerate the downward trend. Even taking the average for the first three as against the last three years of this period, however, the decline for beef and veal combined amounted to 17 per cent. Meanwhile the

[1] In some respects the figures relative to slaughter are misleading, though they are the best available. In arriving at total slaughter the Department of Agriculture was forced to estimate the local and farm slaughter (designated "Other") by using, with certain modifications, the only figures available showing the actual ratio of this to interstate slaughter; namely, those obtained in the census of 1909. This method was necessarily an imperfect one, but perhaps sufficiently accurate for the present purpose. Again, slaughter is a somewhat misleading index of the productivity of our cattle industry, since it includes imported animals — some of them further fed in this country, others sent directly to the killers. One purpose of this table, however, is to show beef consumption, and in order to do this it is obviously necessary to start with the entire supply, subtract exports, add imports, and make allowance for difference in stocks on hand at the beginning and the end of each year.

retention at home of large quantities of dressed beef that would formerly have been exported, and the growth of the import trade, together failed to

UNITED STATES BALANCE OF TRADE IN BEEF AND VEAL, 1900–25

(Figures, in millions of pounds, include meat equivalent of the trade in live cattle)*

Fiscal year	Imports	Exports	Net exports (+) Net imports (—)	Fiscal year	Imports	Exports	Net exports (+) Net imports (—)
1900	66	673	+607	1913	164	55	--109
1901	55	737	+682	1914	505	44	−461
1902	38	654	+616				
1903	25	626	+601	1915	427	280	−147
1904	6	771	+765	1916	272	330	+ 58
				1917	183	329	+146
1905	11	700	+689	1918	158	530	+372
1906	11	764	+753	1919	235	505	+270
1907	12	615	+603				
1908	35	482	+447	1920	301	259	− 42
1909	53	307	+254	1921	190	121	− 69
				1922	101	104	+ 3
1910	74	211	+137	1923	154	58	− 96
1911	69	184	+115	1924	96	41	− 55
1912	120	128	+ 8	1925	75	75	+ 0.2[a]

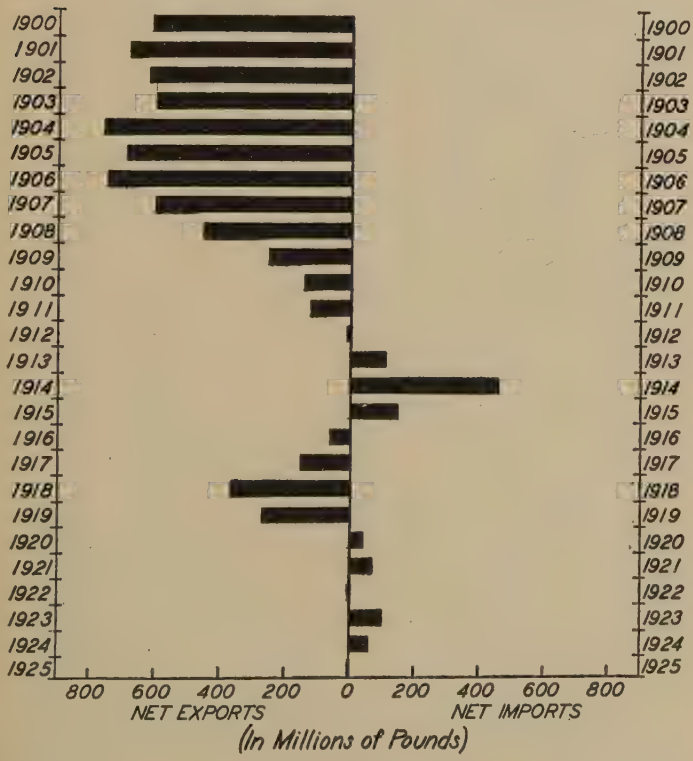
* Imports of live cattle are converted into terms of beef as follows: 1900–14, 375 pounds per head; 1915–25, 450 pounds per head. Exports are converted as follows: 1900–14, 600 pounds per head; 1915–24, 450 pounds per head. See U. S. Tariff Commission, *Cattle and Beef in the United States*, 1922, p. 38, notes (1) and (2).

[a] Net exports: 245,000 pounds.

make up for the fall in production. Hence consumption also declined. From 6,948,000,000 pounds in 1907 the consumption fell to 5,772,000,000 pounds in 1914, that is, by 17 per cent, and the

next year reached the lowest point since 1907, namely 5,523,000,000 pounds, or 21 per cent less than in 1907. Per capita of population, the decline

UNITED STATES BALANCE OF TRADE IN BEEF AND VEAL, 1900–25
(Including the meat equivalent of the trade in live animals)



in consumption of beef and veal was, of course, even more striking. Between 1907 and 1915 beef consumption declined by more than 30 per cent,

veal by almost 40 per cent; while for the first three as compared with the last three years of this period the decline was 23 per cent for beef and 35 per cent for veal.

Turning now to the war period, it will be observed that there was a marked revival of production, of exports, and even of domestic consumption. By 1918, the peak year, production of beef had increased to almost precisely the amount in 1907, production of veal by even a greater relative amount; exports of beef were twice as great as in 1907; and total consumption was only slightly lower than in that year. Even the per capita consumption increased somewhat, though it fell far short of the point at which it had stood in the earlier years. These figures are for dressed beef only, but a glance at the figure on page 47 reveals that there was a return during this period to large net exports of beef even when the beef equivalent of live cattle is included.

Since the war the fundamental trend has been one of recession toward the post-war situation. True, production and consumption have not been declining throughout the entire period; indeed, since 1922 they have risen to such an extent that in 1925 the one was almost equal to, and the other exceeded, the record figure for earlier years. But in the main this increase has been due to the belated and severe liquidation through which this industry has been passing. That is to say, it has been due primarily to forced sale of stock and curtailment of operations rather than to normal disposal of a marketable

surplus. As the diagram at the bottom of page 44 discloses, the actual number of beef cattle in the country, in short the productive capacity of the industry, has been declining. A more complete account of this will be given in the chapter which follows. Suffice it for the moment to say that the recent increase in slaughter represents contraction rather than expansion of the industry. Meanwhile, as the figure on page 47 reveals, a net import of beef (including that represented by live animals) has again appeared — this notwithstanding the duties which have been in effect since 1921.

Again to summarize: Between 1907 and 1914 the United States passed through a period of transition from a beef-surplus to a beef-deficit country. The war brought a return to our former status as a surplus-producing country which, in the light of the post-war liquidat on and the resumption of net imports, is to be regarded as exceptional. Owing in part to the increase of population and in part to the decline in production, the underlying trend during the past 20 years has been in the direction of beef deficiency. We are now, as immediately before the war, virtually at the point of balance between net imports and net exports.

II. WHY PRODUCTION HAS FAILED TO KEEP PACE WITH CONSUMPTION

The explanation of the transition that has been described is to be found in the natural evolution of our agriculture with the settlement of the country.

It involves a discussion of the encroachment of farming upon the pastoral regions and an analysis of certain problems growing out of the land situation in the West.[2]

The decline in our beef production before the war was due in the main to the inability of the industry to compete with other agricultural pursuits on tillable land. A great many other causes have been assigned for the decline, but most of these, when sufficiently analyzed, prove to be simply consequences or phases of the transition from extensive to intensive use of the land as the country becomes more thickly settled. This applies to such alleged causes as the competition of dairying at home and of South American beef in the world market Both of these are the result of the growing pressure of population upon our resources. It is true, for example, that South American beef has replaced our own in the British market; but this is primarily because of our inability in the face of declining production and increasing demand at home to supply the foreign demand at a satisfactory price.

The pastoral type of beef production is a frontier industry. It commonly prevails only in new countries or in regions unadapted to crop-raising. On land adapted to farming it cannot, as an exclusive enterprise, compete with cereal crops in food pro-

[2] Another publication of the Institute of Economics, *Financing the Livestock Industry* (now in press), discusses many of the technical aspects of cattle production which have a bearing on this and the following section.

ductivity.[3] The result is the familiar transition which usually occurs in the newer countries wherever natural conditions permit. Pastoral production as such gives way to farming. It may first give way to grain crops and then, with the exhaustion of the soil, yield to general farming in which crop and livestock production are combined. Or it may give way directly to general farming. More commonly, however, the process is an indirect one; and it is this indirect transition which chiefly accounts for the decline of production in the United States after the turn of the century. So long as new land was available the encroachment of farming upon the free range involved no decline in cattle production. On the contrary, with the addition of more farm cattle to the number carried on the shifting frontier the total tended to increase. But with the disappearance of the frontier, that is to say, with the settlement of all of the unoccupied public domain adapted to settlement, the encroachment of farming upon the pastoral regions tended to reduce the number of cattle carried on what was once open range and hence the total number in the country.

Before submitting the evidence upon which this explanation is based it is important to guard against misunderstanding as to its implications. It is not intended to imply that cattle-raising invariably

[3] See, for example, U. S. Department of Agriculture, Farmer's Bulletin No. 877, *Human Food From an Acre of Staple Farm Products.*

diminishes, much less disappears, with the breaking up of the range In some regions the transition to cattle-production on a semi-ranching basis or as a part of mixed farming has actually wrought an increase in the total number carried on the land. Production of home-grown feed has more than offset the other factors making for reduction of the herds. Nor is it intended to imply, in respect to the process as a whole, that the aggregate number carried may not eventually become greater than it was under the extensive grazing system; or still more important, that the amount of *beef* produced may not become greater. On the contrary, with the further introduction of cattle in regions now devoted largely or exclusively to crop-raising and with improved management through better breeding, younger maturing, and reduced calf losses, it is not impossible that more cattle — or at any rate more beef — may be produced in the Western country than at any time in the past. This may or may not occur. But it is not the point which here concerns us. All we are saying is that upon the whole the process of transition from grazing to farming has, in fact, involved a loss in our beef output which improved methods of management have thus far failed to offset. Let us now examine the grounds for this statement.

The decline in the production of cattle in the United States begins approximately with the period which marks the extinction of the frontier. If we may accept as authority so distinguished a student

of our frontier history as Professor Turner,[4] the American frontier may be said to have disappeared by 1890 or thereabouts. But it was at about this time also that the production of cattle and sheep, that is, of livestock adapted to range conditions, reached its highest point. Thus the production of sheep for the whole country reached its peak in 1884, the production of cattle in 1894. In the West sheep production reached its climax in 1885,[5] while by 1900 nearly all of the Western territory was stocked close to its cattle-carrying capacity.[6]

The manner in which the increasing pressure of population and the extinction of the frontier have combined to bring about a reduction in the number of cattle and sheep is brought out in the table on page 54 and the chart on page 55. The table shows the trend of our cattle and sheep population since 1850, and the chart shows the trend of our livestock and human population over the same period.

The first feature to be noted (see the chart on p. 55) is the sharp contrast, after the decade from 1885–95, between the trend of beef cattle and sheep

[4] Turner, F. J., *The Frontier in American History*, pp. 1 and 39. As evidence the author cites the following announcement by the Superintendent of the Census for 1890:

"Up to and including 1880 the country had a frontier of settlement, but at present the unsettled area has been so broken into by isolated bodies of settlement that there can hardly be said to be a frontier line. In the discussion of its extent, its westward movement, etc., it cannot, therefore, any longer have place in the census reports."

[5] U. S. Tariff Commission, *The Wool Growing Industry*, p. 145.

[6] U. S. Department of Agriculture, *Yearbook*, 1921, p. 239.

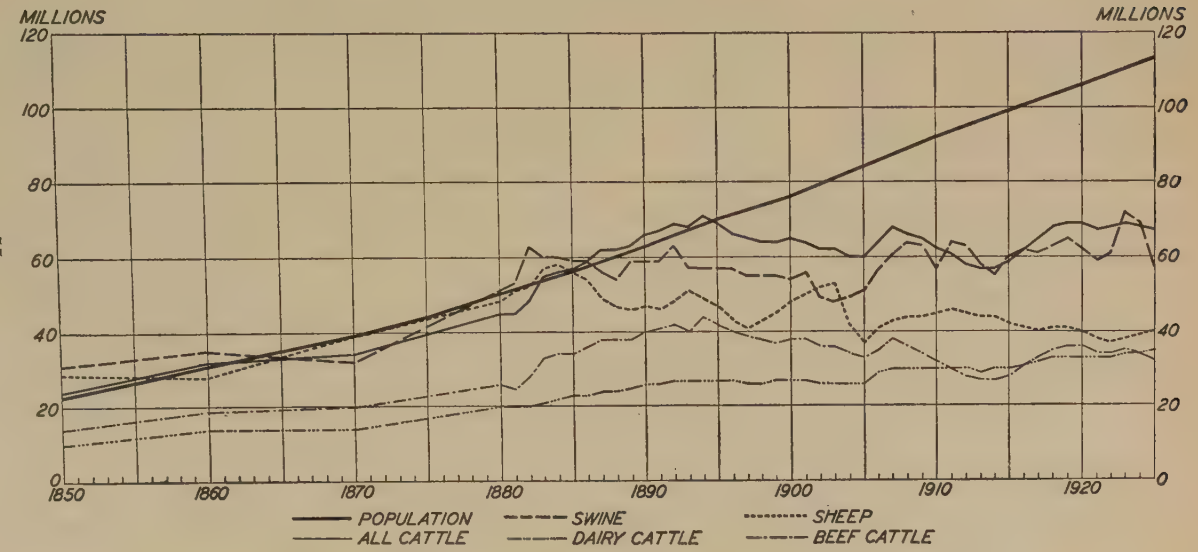
ESTIMATED TOTAL NUMBERS OF CATTLE AND SHEEP IN THE UNITED STATES, 1850–1925*

(In millions of head)

Year	Cattle			Sheep	Year	Cattle			Sheep
	Dairy	Beef	Total			Dairy	Beef	Total	
1850	10.1	14.4	24.5	29.1	1900	27.4	37.5	64.9	48.1
					1901	26.8	37.7	64.5	50.4
1860	13.5	18.9	32.4	27.6	1902	26.1	36.4	62.5	51.9
					1903	26.3	35.6	61.9	53.0
1870	14.0	20.0	34.0	39.0	1904	26.4	33.8	60.2	42.5
1880	19.5	25.9	45.4	48.5	1905	26.2	33.3	59.5	36.8
1881	20.1	24.9	45.0	51.2	1906	29.1	34.8	63.9	41.0
1882	20.5	27.6	48.1	52.3	1907	30.3	37.9	68.2	42.7
1883	21.3	33.4	54.7	56.6	1908	30.1	35.9	66.0	43.5
1884	21.9	34.1	56.0	57.5	1909	30.4	34.4	64.8	44.3
1885	22.6	34.4	57.0	56.5	1910	30.0	32.0	62.0	44.8
1886	23.1	35 7	58.8	53.6	1911	30.2	30.5	60.7	45.7
1887	23.6	37.9	61.5	49.1	1912	29.9	28.3	58.2	44.6
1888	24.1	38.3	62.4	47.2	1913	29.4	27.4	56.8	43.7
1889	24.9	38.3	63.2	45.7	1914	29.6	27.2	56.8	44.2
1890	25.9	39.8	65.7	47.0	1915	30.3	28.3	58.6	42.3
1891	26.1	40.9	67.0	46.4	1916	31.3	30.9	62.2	41.1
1892	26.9	42.0	68.9	48.4	1917	32.3	32.6	64.9	40.2
1893	27.0	40.5	67.5	51.3	1918	32.7	35.1	67.8	40.9
1894	27.1	43.7	70.8	49.3	1919	32.8	36.2	69.0	41.1
1895	27.3	41.7	69.0	46.7	1920	32.9	35.9	68.8	39.5
1896	26.8	39.7	66.5	42.6	1921	32.7	34.5	67.2	37.9
1897	26.5	38.7	65.2	41.3	1922	33.4	34.3	67.7	36.8
1898	26.4	38.0	64.4	42.6	1923	33.9	35.0	68.9	37.7
1899	26.8	37.1	63.9	44.6	1924	34.4	33.8	68.2	38.8
					1925	35.1	31.5	66.6	39.6

* U. S. Department of Agriculture, Bureau of Animal Industry, Circular No. 241, *Food Animals and Meat Consumption in the United States*, June, 1925, pp. 2–3. All figures are adjusted to January 1 of each year.

COMPARISON OF HUMAN AND LIVESTOCK POPULATION OF THE UNITED STATES, 1850–1925
Showing their Divergence after the Passing of the American Frontier.



population on the one hand and of human population on the other. It will be observed that the curves for beef cattle and sheep part company with that for human population, the one in 1894, the other in 1884 and that thereafter the general trend of both is downward, whereas the trend of human population is at all times steadily upward. Between 1894 and 1914 the number of beef cattle declined by 38 per cent; and even in 1925, after a period of war expansion and only partial liquidation of this gain, the number was 28 per cent less than in 1894. In 1914 the number of sheep in the country was 24 per cent, and in 1925, 31 per cent less than in 1884.

A second feature is the contrast between the trend of beef cattle on the one hand and dairy cattle and swine on the other. These latter are peculiarly farm animals, and it is noteworthy that their numbers have increased. This applies especially to our dairy herds. These have increased so steadily that in 1925, notwithstanding the decline in beef cattle, the number of all cattle was only about 6 per cent less than in 1894 As regards swine, the increase in numbers since the eighties is less striking, though here too the general trend is upward.[7]

[7] It will be noted that the curve for swine parts company with that for human population at about the same time, and almost as abruptly, as do the cattle and sheep curves. Since swine are not typical grazing animals this at first raises a doubt as to whether the extinction of the frontier does after all explain the decline in numbers of cattle and sheep. In fact, however, the cessation after

The broad significance of these figures is not to be escaped. The inception of the decline in production of range livestock contemporaneously with the extinction of the frontier was no mere coincidence. It was simply one aspect of the disappearance of the frontier. So long as there was plenty of free land, grazing pushed steadily westward in advance of crop husbandry, until finally there was no place left to go. Thenceforth the encroachment of farming made great inroads into the range herds. Between 1900 and 1920 the area of unappropriated and unreserved public lands decreased from 917,135,000 acres to 200,000,000 acres. The land thus alienated did not, to be sure, become wholly unavailable for cattle-raising. Some of it, such as that filed upon under the 640 acre Grazing Homestead Act of 1916, was suitable only for grazing; and many farm homesteaders found it profitable to carry some cattle. Yet on the whole this enormous reduction in the area of open range involved a great diminution in the number of cattle carried. Between 1907 and 1914 the number of cattle other

1882 of the previous rapid increase in swine was itself partly due to the westward progress of homesteading. In part, to be sure, it was due — and this applies especially to the abruptness of the halt — to the prohibition by several European countries in 1881, under the guise of sanitary regulations, of imports of American pork. But it was also due to the fact that by 1880 or thereabouts practically all of the American soil best adapted to corn, and hence hog, production had been occupied. On this last point, see U. S. Department of Agriculture, *Yearbook*, 1922, p. 191; also *Yearbook*, 1897, p. 578.

than milch cows declined by 47 per cent in the tier of states running from Oklahoma to North Dakota, and by 25 per cent in the Far West and in Texas.

The encroachment of farming upon the pastoral regions has resulted in a less effective utilization of the remaining range. Its effect has not been confined alone to the reduction of the area of pastoral land available for grazing. It has tended also to render more difficult the conduct of the industry on the virgin lands which yet remain. In the first place, it has seriously interfered with the movement of the cattle between the summer and winter grazing areas, and to and from the better feeding grounds. Much of the land taken up, especially that under the 640 acre Homestead Act, lies between semi-arid and mountainous country, that is, between winter and summer grazing areas. Such land is urgently needed for maintenance of the herds during the spring and fall movement. To some extent the difficulty has been met through the establishment of stock driveways, but this has been only a partial remedy. The outcome of this cutting up of the intervening grazing lands has frequently been that the adjoining range is unused by reason of its inaccessibility to the large stockmen, and of the inability of the adjacent homesteaders to finance the procurement of enough cattle to utilize it themselves.

In the second place, homesteading has resulted in overcrowding of the remaining range and hence in the reduction of its carrying-capacity through

overgrazing. This has frequently been further aggravated by premature gazing. Difficulties of this sort are inevitable in the absence of legal or collective restraint, since there is no incentive for one man to spare the range while another is free to reap the benefit. No recent estimate of the effect of unregulated grazing is available, but as late as 1915 the Department of Agriculture estimated that the average carrying-capacity of public lands outside of the National Forests had been reduced from this cause by 25 per cent.[8]

III. POSSIBILITIES OF STIMULATING PRODUCTION

It has been shown that the cattle industry of the United States has declined, not because of foreign competition in the domestic market, but because of the inability of the industry to compete with other agricultural pursuits for the dominant use of the soil. As a pastoral industry it has been confined more and more to areas unfit for crop-raising, under conditions that have greatly hampered the effective use even of those areas. The question therefore now arises: Is it physically possible to halt the decline or to increase production; and if so, how far is the increase of prices an essential part of such a program? Let us first examine the physical possibilities of expansion.

The possibilities which may be considered are: (1) improvement in the conditions of production on the range; (2) increased production of cattle in

[8] U. S. Department of Agriculture, *Yearbook*, 1915, p. 300.

the farming regions; (3) improvements in technique — earlier maturing of cattle, better breeding, and better management; (4) increased cattle production on land at present only partly utilized; (5) fostering of cattle-raising at the expense of other agricultural pursuits.

1. *Expansion through improvement in conditions of production on the range.* One difficulty of the range cattlemen, it was stated, is that arising from interference of homesteading with the full utilization of winter and summer range. This, however, is only the most outstanding of a large number of difficulties the alleviation of which is contingent upon readjustments in the land situation on the Western range. The problem of putting this land to the most effective use is by no means solved. Homesteading has not been uniformly permanent and profitable. Very often it has been impossible for the settler to eke out a living on his small holdings. Where this has occurred, either dry-farming has proved to be a failure or the holdings of the homesteader have been found too small to furnish a living by stock-raising. The result, in short, has been that in many localities homesteading has greatly interfered with the operations of the range stockmen, and yet has not resulted in the upbuilding of a prosperous community of small landholders.

Precisely what should be done to improve the land situation is, however, a matter upon which opinions differ. On the one hand, there are those who believe that the real need is for a concentration

of ownership or control in regions where homesteading has been unsuccessful. They anticipate that many of these holdings will inevitably pass into the hands of the large operators or of cattle companies as soon as the land has been patented. They believe, moreover, that such an outcome is desirable; that it will reduce the uncertainty and risk now prevalent in the industry and encourage the introduction of many needed improvements, as, for example, water development and fencing. They admit that the absorption of the small holdings by the large operators is contrary to the purpose of the homestead laws, that is, settlement on the land; but they believe that the facts justify important modifications in the application of this policy. They would, therefore, not only abandon further effort to strengthen the position of the homesteader under the circumstances just described, but they would encourage, through legislation, the acquisition by the larger operators, by purchase or lease, of many of the small private holdings and of desirable grazing areas on the remaining public domain.

On the other hand, there are many, among them the small stockmen, who, while admitting the need for readjustment, do not wish to see the purpose of the homestead laws defeated. From their point of view the most essential readjustment is the establishment of homesteads large enough to allow a good living to a family. Already favored by the accessibility of summer range in the National Forests and by a system of grazing permits which

enables them to share in its use, the chief remaining need of the small stockmen, as they view it, is for large enough homesteads to provide adequate winter feed for their herds.

Which of these points of view is the sounder one is not a matter upon which opinion need be expressed here. In an area subject to so much physical variation as the Western range there is probably no land policy that can be rigidly followed in all regions. In some regions the large operators are now in fact acquiring control of the small holdings patented under the Grazing Homestead Act. Such amalgamations are similar to those that have already occurred under earlier homestead laws, as for example in the sand hills of Nebraska. In other regions, where conditions are more favorable to homesteading, the small holdings will doubtless be consolidated and enlarged. If the Government is to follow consistently its traditional policy of encouraging settlement of the land, this is inevitable. The one thing in connection with this problem that is certain is that it will take a long time to arrive at a satisfactory solution. In so far as progress is made in solving it, the situation of the range cattle industry will, of course, be improved; but progress seems likely at best to be difficult and slow.

There is a further possibility of expansion of the range cattle industry through the adoption of measures to increase the present carrying-capacity of the grazing areas. Excessive and premature grazing, as we have said, has been responsible for

great deterioration of the range. On the open range the greatest immediate promise of relief from this evil seems to lie in the adoption of Federal regulation of grazing. Such regulation, under a system of grazing permits, has already been applied with good results in the National Forest Reserves.[9] The carrying-capacity of the National Forests is estimated to have increased 20 per cent during the decade before the European war.[10] Owing in no small measure to control of grazing, the Forest Reserve — which comprises almost 200 million acres and constitutes 75 per cent of the summer range — has been a most important adjunct of the range industry.

Regulation of grazing is, however, only one of the possible means of range improvement. Others include the construction of watering places, trails, and bridges — all of which would open new grazing areas; improved methods of handling stock, including the use of drift fences and better methods of salting; reseeding of the range; and burning of brush to clear more land.[11] The need for these and other improvements is indeed frequently cited in justifica-

[9] "Good," at least, from the standpoint of protection of the carrying-capacity of the range. Some of the large operators are, however, dissatisfied with the system in other respects. For a discussion of this and a defense of the general policy of permissive grazing, see Greeley, W. B., Chief of U. S. Forestry Service, "The Stockman and the National Forests," *Saturday Evening Post*, Nov. 14, 1925.

[10] U. S. Department of Agriculture, Office of Secretary, Report No. 110, *Meat Situation in the United States, Part II, Livestock Production in the Eleven Far Western Range States*, 1916, p. 18.

[11] *Ibid.*, p. 16.

tion of a more rapid disposal of the remaining public domain to private ownership or control. This, it is also urged, would mitigate the evil of overgrazing. However that may be, it is clear that under proper measures of control the carrying-capacity of the range could be substantially increased. In 1916, for example, the Department of Agriculture estimated the possible increase on the open range under such conditions at 30 per cent within a period of 10 years. Even in the National Forests, where regulation of grazing was already in effect, the Department estimated the probable increase in carrying-capacity within the same period, due to continued grazing regulation and to other improvements, at 15 per cent.[12] That this estimate was not an unduly optimistic one is shown by the fact that in the decade which followed the carrying-capacity of the National Forests *did* increase by nearly 14 per cent. Clearly, the possibility of alleviating some of the difficulties under which the range producers now operate must be taken into account.

2. *Expansion through increased production in the farming region.* The production of beef under farm conditions also offers possibilities of expansion. Reference has already been made to the trend in this country toward production of cattle upon a farm or semi-ranch basis.[13] This trend is likely further to manifest itself in several ways. In the dry-farming area, whether it be as a result of the

[12] *Ibid.*, p. 25.

[13] See pp. 25–6.

failure of dry-farming or of exhaustion of the soil through constant grain cropping, more livestock — presumably more cattle — must sooner or later be carried on the land. Indeed, in parts of the West — in Montana and the Dakotas, for example — this process is going on now.

In the Corn Belt, also, there are several indications of further possible expansion. As land values have increased, there has been in recent years a noticeable tendency to breed and rear more cattle on farms containing rough areas that have not heretofore been put to full use. This tendency has been further encouraged by high freight rates upon feeder cattle from the range and by the increasing consumptive demand for "baby beeves" (animals fattened at from 12 to 18 months of age), the production of these latter being a somewhat specialized branch of the industry adapted only to farm conditions. Many Corn Belt farmers are endeavoring thus to make a profit on growing as well as feeding animals.

There is, moreover, the possibility of making more extensive use of farm roughage, such as straw and fodder. A tremendous waste of feedstuffs occurs annually on American farms. Before the war the Department of Agriculture estimated the total loss to American farmers from the waste of corn fodder and straw at over $100,000,000 each year.[14] That

[14] U. S. Department of Agriculture, Office of Secretary, Report No. 112, *Meat Situation in The United States, Part IV, Utilization and Efficiency of Available American Feedstuffs*, 1916, p. 5.

cattle production can be substantially increased by a fuller utilization of roughages was demonstrated during the war. In the United States as a whole, and in the Corn Belt especially, the acreage devoted to grain crops and hay increased strikingly, yet the production of livestock particularly of cattle, also materially increased.[15] In part this was made possible through a reduction in exports of oilcake and some other feeds, but it also indicates a more extensive use of roughage.

Finally, there are the gains, in connection especially with cattle-feeding, that arise from enrichment of the soil and from the utilization by hogs of partially digested corn voided by the cattle. Such gains are frequently sufficient to turn an apparent loss into a real profit.[16] A more general appreciation of these advantages would, of course, tend to stimulate cattle-feeding.

3. *Expansion through improved technique — earlier maturing of cattle, better breeding, and better management.* In recent years there has been in this country a distinct trend toward lighter-weight, younger cattle. Under modern living conditions the household demand for beef has been increasingly for the small, tender cuts in place of the large roasts and the rich steaks of half a century ago. This has tended to place a premium on young, well-finished,

[15] U. S. Tariff Commission, *Cattle and Beef in the United States*, p. 14.

[16] See the report of the Federal Trade Commission on *The Meat Packing Industry*, Vol. VI, p. 64; also what was said on p. 18.

grain-fed animals. By so doing it has tended to increase — or to moderate the decline in — beef production. The cattleman who matures and disposes of his animals at two rather than, say, three years of age generally more than offsets the loss in average weight of the animals sold by the greater rapidity of his turn-over. He must carry a larger proportion of breeding animals in his herd and use more harvested feed (since more of the gain must come in the feed-lot), in order that more animals — younger and lighter, but in good flesh — may be sold annually. In this process of earlier maturing, breeding is important. A well-bred animal always utilizes feed during fattening more effectively than does a poorly-bred one, but the advantage of good breeding is especially marked in the fattening of *young* animals. A well-bred calf can always be finished for market at any time during growth, but a growing "scrub" animal is usually an inefficient converter of feed into flesh.

In addition to earlier maturing and better breeding there are other possibilities of improvement in management, such as better feeding methods; better shelter and care, especially as these concern reduction in calf losses; and elimination of pests such as the cattle-tick. Merely to mention them is sufficient.

4. *Expansion through increased production on land at present only partly utilized.* There is an enormous area in the United States more or less adapted to grazing and not fully utilized. The Federal Census

of 1920[17] does not give sufficiently detailed figures concerning land utilization to show this, especially as it relates to land not in farms; but estimates[18] for an earlier date, based largely upon the Census of 1910, are suggestive. They indicate that of approximately 1,000,000,000 acres of land in the United States not in farms in 1910 there were something like 390,000,000 acres in the Mountain and Pacific States, 120,000,000 acres east of the Rocky Mountains and largely west of the 100th meridian (which traverses western Kansas at Dodge City), and large areas[19] of timber, cut-over, and swamp land: all of this more or less suitable for

[17] The Census makes a limited classification of the *farm* land, *i.e.* into "improved," "woodland," and "other unimproved"; but it does not attempt a classification of the land *not* in farms, such as timber, cut-over and swamp lands, range, and barren areas. It is to be noted, however, that of the total land area of 1,903,300,000 acres the area not in farms declined from 1,024,500,000 acres in 1910 to 947,500,000 acres in 1920. But since much of the land added to the farming area during this period still remains unimproved and is adapted only to grazing, it seems unlikely that any important inaccuracy for the present purpose can arise from the use of estimates based on the 1910 Census. The area of *improved* farm land increased only from 478,451,750 acres to 503,073,007 acres in the decade.

[18] See the following sources: U. S. Tariff Commission, *Cattle and Beef in the United States*, p. 17, note 19; U. S. Department of Labor, Office of the Secretary, *Employment and Natural Resources*, 1919, Table 3, pp. 51-2, and Table 4, p. 55; U. S. Department of Agriculture, Bulletin 626, *Pasture Land on Farms in the United States*, 1918, especially Table 1, pp. 14–5.

[19] There were about 394,000,000 acres of timber, cut-over and swamp land, nearly half of it in the the National Forests, the bulk of the remainder located east of the 100th meridian. The former is already extensively utilized for grazing; the latter, however, could in many regions be put to greater use.

grazing.[20] Furthermore there were over 290,000,000 acres of improved and unimproved pasture on the farms, about 60 per cent of it east of the 100th meridian, and nearly two-thirds of it adapted only to grazing.[21] Economic considerations aside, here are resources which would permit of much further extension of the industry.

5. *The fostering of cattle-raising at the expense of other agricultural pursuits.* This type of expansion is self-explanatory. If prices of cattle were to increase more than prices of other agricultural products, cattle production would naturally tend to increase at the expense of other enterprise.

IV. PRICE STIMULATION AND EXPANSION OF PRODUCTION

It is quite apparent that a very considerable increase in beef production is physically possible, even without displacement of other agricultural pursuits. But at what cost? How far do the various modes of expansion above indicated presuppose increased prices?

Any considerable increase in production except in response to increased prices is scarcely to be expected. By this it is not intended to imply that even a substantial increase in prices would greatly stimulate production. All that is meant is that no considerable increase of production is likely actually to occur

[20] U. S. Department of Labor, *Employment and Natural Resources*, Table 3, pp. 51–2.

[21] U. S. Department of Agriculture, Bulletin 626, *Pasture Land on Farms in the United States*, p. 14.

except in response to a previous increase in prices. Let us now re-examine from this standpoint the possibilities of expansion above discussed.

As to production on the range it was shown that a readjustment of the land situation, together with range improvement, would in all probability permit expansion of the industry, but that these are things that can come about only slowly. Even if they could be carried out without any increase in costs of operation, especially of capital charges — and this appears doubtful — they would still have to be viewed more as ultimate than as immediate possibilities. On the farms the possibilities of expansion are seemingly greater, but here too caution must be exercised. It is easy to point to the possibility of more thorough utilization of resources for beef production on the farms — greater use of roughage, of rough land, and so on. In fact, however, we know that there are many practical obstacles, economic and human. The intelligent and progressive farmer presumably already takes advantage of such opportunities so far as he can afford to do so; but he cannot be expected to devote to them time, energy, and capital which can be otherwise used to better advantage. The ignorant or the indifferent farmer may be neglecting real opportunities, but human inertia is not an obstacle easily to be overcome. Education may, of course, accomplish something. But the great expansion of production in the farming region during the war, making due allowance for the patriotic impulse, suggests that it is after all

increased prices that constitute the chief incentive to a fuller use of these latent resources.

The third mode of expansion indicated above — improved management and technique — obviously does not presuppose increased prices; it relates, rather, to increased efficiency and lower costs. But the fourth and fifth — increased production on land not now in use, and displacement of other agricultural pursuits — obviously rest on the presupposition of increased prices. To be sure, the obstacles to bringing unproductive land into use for beef production may not always be apparent, but they are generally real. In northeastern United States, for example, there is much land that could be more fully pastured during the spring, summer, and fall months if adequate local feed supplies were available to carry the herds through the winter. But in this region most of the local feed supply is consumed by the dairy industry. In the Southern Appalachians — again to illustrate — where considerable expansion is possible, difficulties of other sorts intervene: lack of fences, lack of capital for needed improvements and equipment, isolation, and in many sections ignorance and lack of thrift. Such obstacles as these, whether economic or human, can be overcome only at a cost.

In sum, then, taking the industry as it now functions, there is little reason to suppose that production can be much expanded except at a cost not reimbursed at the present level of prices. How *much* it would expand if prices rose — how readily output

in this industry is likely to respond to increased prices — is a further matter which we take up in a later connection.[22]

The tariff significance of what has been said should be evident. Production of beef in the United States has been failing to keep pace with the needs of our growing population. These needs can be supplied from domestic sources, but the indications are that this can be done only at increased costs and higher prices. Our trade balance has so shifted that tariff duties which heretofore could have had no effect on domestic prices — barring a period of perhaps two or three years before the war — should now begin to have some effect on them. Thus the time has arrived when it may be possible through the tariff to bolster up an industry which has been falling behind in the struggle amongst the various branches of agriculture for the use of the land. How far, as one of the objects of duties on cattle and beef,[23] production can actually be stimulated, or its decline checked, and at what cost, are matters which more properly fall within the scope of Part III of this book.

[22] See pp. 231–41.

[23] With the other objects for which duties may be imposed — to increase the profits of those in the industry or to obtain increased revenue for the Federal Government — we are not concerned at this point. For a discussion of these, see pp. 245–9.

CHAPTER IV

THE POST-WAR CRISIS IN THE DOMESTIC INDUSTRY

THE preceding pages have dealt with the industry from the point of view of the underlying forces affecting its development and present status. It remains to consider in this chapter the more or less transitory conditions wrought by the war and its after-effects.

The sharp post-war decline in cattle prices and the financial stringency which followed precipitated a serious crisis in the cattle industry. Like many others, the cattle industry experienced a great boom during the war. The enormous overseas demand for beef and the premium on North American beef owing to the shipping scarcity forced prices to unprecedented levels. During the period 1909–13 the price of native steers, 1,200–1,350 pounds, Chicago, had averaged $7.21 a hundred. By 1918 it had risen to $15.30, and in 1919 it went even higher. In these circumstances funds poured freely into the business, especially into the breeding and ranching end. Livestock loan companies sprang up overnight, and banks extended credit on an unprecedented scale. In the ecstasy of the time, loans were made with amazing lavishness, not to say reckless-

ness. In the desire to secure presumably good paper yielding high rates — and of course with a view to increasing production —credit was extended on highly inflated values and with none too careful scrutiny of the assets offered as security. To make matters worse, there occurred in 1919 a most severe drought in the whole region from Colorado northward and westward, and in order to carry the herds over the period of emergency, heavy expenditures requiring a still further extension of credit were necessary.[1]

Then came the inevitable reaction. With the cessation of hostilities the foreign demand for North American beef rapidly fell off. Shipping difficulties that had placed it in a position of advantage were alleviated. Exchange rates began to militate against the continued export of beef in the face of competition from countries less handicapped in this respect. Industrial stagnation both at home and abroad followed. Late in 1920 prices began rapidly to decline. Between September of that year and January, 1921, the price of native steers, 1,200–1,350 pounds, Chicago, fell from $15.65 to $9.15 a hundred, and by the end of 1921 it had descended to $7.00. Of range animals prices had already declined in 1919, due to the partial liquidation compelled by the drought; but in 1920–21 the collapse of the whole cattle market forced them to still lower levels. In

[1] On conditions in the range cattle industry since the war, see U. S. Tariff Commission, *The Cattle Industries of the United States and Canada*, 1925, pp. 40–4.

April, 1919, the price of stockers and feeders had reached the highest mark on record, $12.65 per hundred. By the end of the year it had fallen to $9.15, and except for an upward swing in the spring of 1920 it continued to decline until September, 1921, when the bottom was reached at $5.50.

At the inception of the general price decline the financial interests became alarmed and began calling their loans. This started the process of liquidation in the industry and of course served to hasten the price decline. Herds were sacrificed, immature animals sent to market, and enormous losses suffered alike by borrowers and lenders. Loan companies, banks, and producers were thrown into bankruptcy or hovered on the verge of ruin. In 1922 the situation was eased somewhat, the result on the one hand of a partial industrial recovery and a revival of the consumptive demand for beef and, on the other, of the increased demand for lean animals for feeding in consequence of the wide margin between lean and fat cattle prices and the profitable feeding season of the previous year. But the confidence of the Eastern banks in cattle paper had by this time been thoroughly shaken; and despite the efforts of the Government to relieve the situation, forced liquidation continued. Many producers were able to postpone the evil day in the hope that the crisis would presently pass. But the persistent disparity of cattle prices with living costs and with carrying charges for the herds, and the inability of many banks to hold out indefinitely, kept in progress

throughout 1923 and 1924 the abnormal flow of animals to the slaughter pens. In the latter year matters were made still worse by reason of a short corn crop and a slack demand for lean animals for feeding. By the end of the year stockers and feeders were selling at $5.55 a hundred — a figure but slightly above the record low point since the war.

Throughout the crisis the Government endeavored to provide relief through credit and tariff legislation. One of the first measures taken by the government was the restoration of duties on cattle and beef in the Emergency Tariff Act of May, 1921, and a further increase of the rates in the Act of September, 1922. The efficacy of these measures is a matter which we discuss more fully later.[2]

The main avenue of relief was through the creation of emergency credit facilities. At first this was attempted through private agencies, but it soon gave way to government aid. In 1921 the Stock Growers' Finance Corporation, a private corporation, was organized with a capital of about $50,000,000, and in less than three months loaned about $20,000,000 on livestock. Its activities soon ceased, however, with the grant to the War Finance Corporation of authority to extend emergency credit to the livestock industry. Up to November 30, 1924, when authority to make new loans ceased, the War Finance Corporation loaned some $86,500,000 to livestock loan companies, nearly 90 per cent of which had been

[2] See below, pp. 116–33 and pp. 187–201.

repaid by November 30, 1925.[3] This aid could not, of course, avert disaster for many nor stop the liquidation, but it did tend to ease the situation.

The emergency served also to emphasize a weakness in the credit facilities available to this industry. The weak point in the system of credit theretofore prevailing consisted in the inability of cattle-raisers, as distinguished from those who merely feed purchased cattle, to obtain sufficiently long-term credit except through renewal of short-term loans. The cattleman who breeds and raises cattle on an extensive scale, as in the range sections of the country, is likely to need loans running from one to three years — so-called "intermediate credit." Under normal conditions his needs had generally been met through renewal of short-term notes.

The inadequacy of this system of credit soon became apparent when the post-war price decline set in. With the loss of public confidence in cattle paper, many banks and loan companies refused to renew loans as they fell due. The rapidity with which it was thus possible to curtail credit resulted in heavy losses through forced liquidation that might have been less severe had the maturity of the loans been spread over a longer period. So sudden a contraction of loans would not have been possible in a better system of credit. The trying experience through which the industry passed in the crisis served, therefore, to emphasize the need for credit

[3] War Finance Corporation, *Eighth Annual Report*, for year ended November 30, 1925, p. 12, Table I.

facilities better adapted to the peculiar requirements of this industry.[4] The Agricultural Credits Act of March 3, 1923, represents an attempt to meet the need for intermediate credit in this and in other branches of agriculture. It is to be hoped that the terms of this Act — provided full advantage is taken of them — will bring about a betterment of conditions.[5]

The indications are that the crisis has now passed and that conditions in the industry will improve during the next few years. It is true that up to the end of 1925 cattle prices were still low in comparison with other prices. In December the general wholesale price index for all commodities stood at 156; for farm products, at 152 (1913–100). In the same month the corresponding index for native beef steers, 1200–1500 pounds, Chicago, was 127; for stockers and feeders, 135. But a year earlier the index for native steers had stood at 109; for stockers and feeders at 79. There was thus a marked recovery of

[4] "The experience of the past two years has clearly demonstrated that the livestock industry needs a banking facility that is synchronized with the length of time it takes to mature stock for the market; and it is in this end of the business particularly — the growing end as distinguished from the feeding end — that I see, in the adjustments for the future, the most important and the most interesting problem." Eugene Meyer, Jr., Managing Director of the War Finance Corporation, before the American National Livestock Association, Denver, August 25, 1922.

[5] For a more complete account of the way in which the facilities of the Intermediate Credit Banks are placed at the disposal of the livestock interests, see: Benner, Claude L., *The Federal Intermediate Credit System* (*Investigations in Agricultural Economics, Institute of Economics, Washington*), Chapter IX.

prices in 1925; and as the year 1926 is entered upon, the indications continue favorable for producers, barring adverse seasonal developments.

But whether or not the year 1926 proves to be a good one, there are indications, if we may judge by the recurrence of cycles in this industry in the past, that the prices will tend to rise during the next few years. There appears to be a production cycle of about 16 years from peak to peak in the cattle industry.[6] In terms of purchasing power, prices of cattle were high in 1885, 1906, and 1916, and low in 1891, 1906, and 1923. Accordingly, prices should rise during the next six or eight years.

Nor is it difficult to see why the trend should be upward if we may rely upon the official estimates of numbers of animals in the country. Between January 1, 1920, and January 1, 1926, the number of cattle in the United States declined from 68.9 millions to 59.8 millions, including a decline of some 2.9 millions in the number of steers and 2.5 millions in the number of cows of the beef type. This means an enormous reduction in the potential beef supply of the country. It means that unless there is a rapid restocking of the range the recent surplus is likely soon to be succeeded by a shortage. Viewing the situation in the large it would appear, therefore, that the crisis in the industry is now past and that more prosperous conditions are likely to prevail during the next few years.

[6] Warren, G. F., and Pearson, F. A., *The Agricultural Situation*, 1924, p. 167. See also the chart on p. 232, below.

PART II

THE COMPETITIVE SITUATION

CHAPTER V

FOREIGN TRADE

THE preceding chapters have presented a general background of facts concerning the nature, development, and present status of the domestic industry. The chapters which immediately follow, comprising Part II, will deal with the competitive situation as it relates to the duties on cattle and beef. This requires, first of all, an analysis of our foreign trade — the subject of the present chapter.

I. THE TRADE IN CATTLE AND BEEF

The discussion may be begun by directing attention to the table on page 84.

Two things stand out in this table. The first is the transition in our trade status from a beef surplus to a beef deficit, which has already been discussed. This is indicated by the figures in the last two columns, which coincide with those given in the table on page 46. The second is the co-existence of two types of trade, each exhibiting a different tendency: the increasing importation of cattle; and the rapid decline, only temporarily halted by the war, in exports of live cattle and beef. How this has come about will be evident from the more detailed analysis of these figures which follows.

FOREIGN TRADE OF THE UNITED STATES IN CATTLE AND BEEF, 1900–1925

(Number of animals and pounds of meat, in thousands)

Fiscal Year	Live Cattle				Beef and Veal[c]				Total trade in terms of beef	
	Number		Equivalent in beef		Imports[d]	Exports				
	Imports	Exports	Imports[a]	Exports[b]		Total	Fresh	Preserved	Imports	Exports
1900....	175	397	65,715	238,372	336	434,258	329,079	105,179	66,051	672,630
1901....	145	459	54,365	275,531	809	461,296	351.748	109,548	55,174	736,827
1902....	101	393	37,877	235,730	292	417,921	301,824	116,097	38,169	653,651
1903....	66	402	24,836	241,307	355	385,030	254,796	130,234	25,191	626,337
1904....	16	593	6,035	356,045	199	414,902	299,580	115,322	6,234	770,947
1905....	27	568	10,242	340,684	273	359,246	236,486	122,760	10,515	699,930
1906....	28	584	10,614	350,543	303	413,865	268,054	145,811	10,917	764,408
1907....	31	423	11,794	253,831	463	361,160	281,652	79,508	12,257	614,991
1908....	92	349	34,590	209,526	265	272,427	201,154	71,273	34,855	481,953
1909....	140	208	52,548	124,525	200	182,637	122,953	59,684	52,748	307,162
1910....	196	139	73,587	83,658	703	127,406	75,730	51,676	74,290	211,064
1911....	183	150	68,616	90,060	382	93,619	42,511	51,108	68,998	183,679
1912....	318	106	119,279	63,304	1,023	64,379	15,264	49,115	120,302	127,683
1913....	425	25	159,430	14,828	4,229	40,060	7,362	32,698	163,659	54,888
1914....	872	18	327,035	11,026	178,387	33,125	6,394	26,731	505,422	44,151
1915....	539	5	242,712	2,468	184,519	277,559	170,441	107,118	427,231	280,027
1916....	447	21	201,218	9,579	70,893	320,132	231,214	88,918	272,111	329,711
1917....	374	13	168,159	6,024	15,221	322,767	197,177	125,590	183,380	328,791
1918....	294	18	132,393	8,196	25,700	521,844	370,033	151,811	158,093	530,040
1919....	441	42	198,225	19,055	36,670	485,730	332,205	153,525	234,895	504,785
1920....	575	93	258,898	41,868	42,436	217,111	153,561	63,550	301,334	258,979
1921....	330	146	148,500	65,700	41,956	55,160	21,084	34,076	190,456	120,860
1922....	152	155	68,400	69,750	32,620	34,516	3,994	30,522	101,020	104,266
1923....	264	61	118,800	27,450	34,821	30,514	4,017	26,497	153,621	57,964
1924....	155	33	69,750	14,850	26,627	26,213	2,817	23,396	96,377	41,063
1925....	136	106	61,200	47,700	13,539	27,386	3,144	24,242	74,739	75,086

[a] Converted into beef as follows: 1900–1914, 375 pounds per head; 1915–1925, 450 pounds per head.
[b] Converted into beef as follows: 1900–1914, 600 pounds per head; 1915–1925, 450 pounds per head.
[c] Mostly beef.
[d] Includes preserved beef. Until recently, however, — except for one or two war years — the imports have been almost exclusively of the fresh variety. Since 1922 the preserved varieties have constituted some 20 or 25 per cent of the total.

Exports of cattle, formerly large, have practically ceased. In the earlier years shown in the table the beef exported in the form of live cattle was an important part of the beef export trade, in some years even approaching the amounts exported in the dressed form. The cattle exported consisted largely of finished animals, ready for immediate slaughter and hence permitted to enter the United Kingdom, the chief source of demand. But with the growing relative shortage of beef for our own domestic needs, and, following the development of artificial refrigeration, the advent of enormous supplies of chilled and frozen beef from Argentina and Australasia, this trade practically ceased. That artificial refrigeration alone would have resulted in a decline in the *cattle* export trade is, however, evident from the fact that the overseas trade in beef today is confined very largely to dressed beef. The economies of shipping beef in the dressed form are too great to be easily overcome. There has, to be sure, been some revival of our cattle exports since the war; but these have consisted largely of medium and low-grade animals shipped to neighboring countries, some to Mexico to re-stock denuded ranches and for slaughter, and the remainder to Cuba and the West Indies chiefly for slaughter.

Exports of dressed beef have likewise greatly declined and are now confined largely to the preserved varieties, sent to widely distributed markets. The reasons for this decline were discussed in Chapter III. Changes in the character of the trade may, however, be

noted. During the earlier years of the century nearly three-fourths of the exports consisted of fresh beef, sent mostly to the United Kingdom. The remainder was canned, cured, or pickled beef, and was sent to many countries, among which the United Kingdom was the most important. But in the general decline of exports since that time, the trade in preserved beef of the various sorts has been better maintained than that in fresh beef. Indeed nearly all of our beef exports now consist of preserved beef. This continues to be sent to widely distributed markets, among them Newfoundland and Labrador, the United Kingdom, the West Indies, British and Dutch Guiana, Norway, Germany, and Canada.

Imports of cattle, originating almost entirely in adjacent countries, have tended to increase during the past 20 years. At the beginning of the century, it will be observed, they were diminishing; but with the subsequent decline in our domestic herds and in exports, they began rapidly to increase. They reached the highest point in 1914; but they have nevertheless been larger since that time, even despite the duties imposed after May, 1921, than they were previously.

Until 1914 imports came almost exclusively from Mexico. Owing in part to civil strife in Mexico, which compelled liquidation of the herds, and in part to the upward trend of prices in the American market, this trade had been rapidly increasing for several years prior to the outbreak of the World War.

These Mexican animals were, and still are, very largely animals of low grade, brought into the Southwestern States for further maturing before being fattened and sent to the killers. Their poor quality is reflected in their low valuation for customs purposes. In 1913, when the cattle brought in from Canada were valued on the average at $35 per head in the Canadian market, the foreign market value of the Mexican cattle imported averaged less than $14 per head. In late years the contrast has been less marked, but Mexican animals remain inferior.

Since 1914 Canada has become the leading source of imports. At that time imports across our northern border, which had been increasing even before the removal of the duty in October, 1913, began to mount rapidly. By 1916 Canada had supplanted Mexico as the chief source of supply; and since that time her preponderance has so increased that she now furnishes the bulk of our imports. Stimulated by increased prices, particularly during the war, the Canadian industry was expanding quite at the same time that internal disorders in Mexico were forcing a liquidation that nearly divested that country of breeding stock and greatly diminished its exports.

The predominance of Canada and Mexico in our cattle import trade is revealed in the table on page 88.

It will be seen that imports from countries other than Canada and Mexico have long been negligible. Those which do come in consist almost wholly of

registered stock for breeding purposes, which, since 1883, has been exempt from duty. Most of this stock comes from Great Britain.

DOMESTIC IMPORTS OF LIVE CATTLE, BY COUNTRIES OF ORIGIN
(By five-year averages, 1900–24)

Fiscal year periods	Mexico		Canada		Other countries		Total	
	Number	*Per cent of total*	Number	*Per cent of total*	Number	*Per cent of total*	Number	*Per cent*
1901–05	48,624	*69.0*	21,309	*30.3*	494	*.7*	70,427	*100*
1906–10	86,595	*88.5*	10,247	*10.5*	938	*1.0*	97,780	*100*
1911–15	371,188	*79.7*	93,290	*20.0*	1,418	*.3*	465,896	*100*
1916–20	130,437	*30.7*	291,785	*68.7*	2,470	*.6*	424,692	*100*
1920–24[a]	25,385	*11.6*	191,704	*87.4*	2,110	*1.0*	219,199	*100*

[a] Figures for 1920–24 are for calendar years.

The great preponderance of adjacent countries in our cattle import trade is due in part to their proximity to the American market and in part to the nature of our cattle quarantine regulations. The first is, of course, the chief cause. In a trade in which cost of transportation is so important, the mere existence of a great market near at hand would suffice to explain why the United States is the chief outlet for these countries and derives her imports almost exclusively from them.

But the nature of our cattle quarantine regulations is a contributory cause. These are so framed as virtually to prohibit imports from countries other

than Canada and Mexico. Imposed for the purpose of protecting domestic livestock from contagious animal diseases, their effect is to accord lenient treatment to adjacent countries. Cattle intended for immediate slaughter are, it is true, not subject to quarantine; but only Canada and Mexico are in a position by reason of their proximity to profit by this exemption. Those cattle not so intended, if coming from countries other than Canada, Mexico, or the United Kingdom, are subject to quarantine of 90 days or more; if from the United Kingdom, to 30 days or more. Those coming from Canada and Mexico are, on the other hand, subject to a more flexible system of regulation. We need not here go into its details. In general, while providing for inspection upon entry, it establishes either very short quarantine periods, or none at all, for non-diseased and tick-free cattle when these are accompanied by certificates affirming their immunity from exposure to contagious disease during a stipulated period prior to shipment. The effect of this more lenient treatment of our neighboring countries is enhanced by the fact that cattle held in quarantine remain there at the expense of the shipper or importer for feed and care These regulations seem, indeed, to give tacit recognition to the policy of favoring, so far as imports of beef may be admitted in any form, imports of feeding stock as a supplement to our domestic supply.

Imports of beef, though much larger than before the war, are small in comparison both with cattle imports

and with our total beef production. Prior to 1914 there were scarcely any imports at all. In 1914 and on well into 1915 — for reasons which we shall discuss in a moment — they suddenly mounted to an unprecedented height; but they have since rapidly declined. In 1924 they constituted only about one-fourth of the total imports of beef both on and off the hoof and about one-third of 1 per cent of our estimated total production of beef. While it is to be presumed that the duties imposed since May, 1921, have tended to restrict the trade, it will be noted nevertheless that imports had greatly declined several years prior to the restoration of the duty.

The table on page 91 shows the leading sources of imports of fresh beef and veal since 1914. Prior to that time the small imports arose from a border trade with Canada. Only figures as to fresh beef and veal are shown according to source; but although imports of preserved beef have recently been increasing, the bulk of the imports is of the fresh variety. In the calendar year 1923 imports of canned, pickled, and cured beef amounted to 6,815,639 pounds, and in 1924 to 8,130,616 pounds. This recent increase in imports of preserved beef has been largely due to increased shipments from South America.

It will be seen that Canada has usually been the chief source of imports of fresh beef, but that in 1914 and 1915, when imports greatly increased, the bulk came from South America and Australasia.

These exceptional imports, coincident with a marked increase in cattle imports in the same years, call for further explanation at this point.

DOMESTIC IMPORTS OF FRESH BEEF AND VEAL, BY COUNTRIES OF ORIGIN

(In thousands of pounds)

Year[a]	South America[b]	Canada	Australia and New Zealand[c]	Other countries[d]	Total
1914.....	85,678	15,920	20,717	57,822	180,137
1915.....	144,483	15,305	12,084	12,619	184,491
1916.....	59,862	9.918	5	1,317	71,102
1917.....	5,567	9,435	215	....	15,217
1918.....	1,952	20,768	569	2,163	25,452
1919.....	356	31,124	1,528	5,454	38,462
1920.....	3,519	37,488	5,368	3,807	50,182
1921.....	1,742	26,469	4,162	5	32,378
1922.....	13,292	19,625	3,333	444	36,694
1923.....	1,658	13,800	3,895	3	19,356
1924.....	4,189	9,575	4,336	4	18,104
1925.....	458	11,041	4,360	12	15,871

[a] Fiscal to and including 1918; calendar thereafter.

[b] Argentina, Uruguay, and Brazil, chiefly Argentina. Aside from 25,902,732 pounds received from Uruguay in 1914, 13,802,565 pounds in 1915, and 6,988,978 pounds from Brazil in 1916, these two countries have been only minor sources.

[c] Mainly from Australia, until 1920. Since then more than half from New Zealand.

[d] Includes 57,539,975 pounds re-exported from the United Kingdom in 1914 and 8,676,776 pounds in 1915 — mostly Australasian beef.

The sharp increase in imports of cattle and beef in 1914 was due to several causes, among which the removal of the tariff in 1913 was but one. The liquidation of the Mexican herds during the period of

civil turmoil in Mexico between 1911 and 1916 was a marked stimulus to imports from that source. Whereas they had averaged scarcely 68,000 head annually during the decade 1900–1910, they had by 1913 reached almost 400,000 head, only to increase in 1914 to over 625,000 head.

More important, however, because it served greatly to stimulate imports of beef in all forms, live as well as dressed, was the shortage in our domestic beef supply in 1914 and 1915. Already declining despite the growing needs of an increasing population, our production of beef fell in 1914 to quite the lowest point in years, still remaining low in 1915. For this a scarcity of feedstuffs — the cumulative result of droughts, of short corn crops in 1913 and 1914, of subnormal harvests both of corn and of other feeds in several of the years immediately preceding — was mainly responsible. It so happened, also, that there was a serious epidemic of foot and mouth disease in these years, which tended to restrict shipments to market. Prices of cattle and beef, therefore, far from falling after the removal of the duty in 1913, actually rose both in terms of money and in relation to the general price level.

Nor was the accretion to our supply through importation sufficient to bring them down. In the sense that they were brought in to eke out an unusual shortage in our domestic supply, these increased imports in 1914 and 1915 must, therefore, be regarded as supplemental and abnormal. Yet one cannot say that they were not also in part competi-

tive. To some extent they must have served to check a still further increase of prices and hence to reduce the opportunity for profit to the domestic industry. Under the conditions which prevailed a large amount of beef would presumably have been brought in even had the duty of 1½ cents a pound which was in effect until October, 1913, not been removed; but a less amount than under free trade.

And yet, curiously enough, during part of this period of relative shortage in the domestic output, we were actually exporting beef in quantity. In 1915 (fiscal) exports of fresh beef and veal were almost as great as imports, namely, 170,440,934 pounds as against 184,519,708 — to say nothing of 107,118,000 pounds of preserved beef that were exported. Imports of cattle and beef thus sufficed not only to relieve the domestic shortage but to make possible very considerable exports. That we should have been importing cattle and exporting beef is natural enough. So, also, is the export of preserved beef, which is a somewhat specialized trade. But the simultaneous import and export of fresh beef in quantity is not so easily understood. The official figures do not show that the exported beef was re-exported; though, as there was no duty in effect, some of the imports, mainly frozen beef, may have been entered for consumption and subsequently exported. In any case, we know that most of the exports in 1915 went to the warring countries; so that it is probable that the phenomenon to which we refer was the outgrowth of war conditions.

Whatever the explanation, it is clear that the domestic producer did not suffer from any lack of a market for his animals in consequence of the removal of the duties in 1913.

II. THE TRADE IN RELATED PRODUCTS: MEATS, FATS, AND HIDES

We have thus far been dealing only with cattle and beef. But our foreign trade in certain related products, such as pork and other meats, animal fats, and hides, is also a matter of some importance. Prices of cattle and beef, and hence the effectiveness of a tariff, must obviously depend in some measure upon prices of these related products. Particularly is this true of pork, since it is the chief *meat* substitute for beef; but it is also true of by-products like hides and fats, which form an appreciable though minor part of the entire value of the animal.

The table on page 95 shows, in partial summary, our foreign trade in meats, fats, and hides since 1900.

Glancing first at the figures for meats it will be observed that although exports have diminished and imports increased during the past 25 years, our net exports are still very large. This, it will be further observed, is because of our very large exports of pork. Notwithstanding the decline in pork exports since the war, they have averaged during the past five years (1921–25) more than three-quarters of a billion pounds annually — a figure some 125,000,000 pounds in excess of the average during the first decade of the century. In 1924, the highest point

during the five-year period, they amounted to 908,648,000 pounds. In 1925, owing largely to the very short corn crop in 1924, they reached the lowest point, namely 596,385,000 pounds. On the whole they have been well sustained during the past

FOREIGN TRADE OF THE UNITED STATES IN MEATS, FATS, AND HIDES, 1900–1925

(Figures, in thousands of pounds and for fiscal years, include meats, fats, and hides represented by the trade in live animals)

Product	Annual average, 1901–1910		Annual average, 1911–1920		Annual average, 1921–1925	
	Imports	Exports	Imports	Exports	Imports	Exports
Total Meats	**44,143**	**1,234,196**	**285,119**	**1,181,065**	**180,163**	**883,462**
Beef and veal	32,035	586,727	243,543	264,274	121,239	79,846
Mutton and lamb	9,215	9,016	13,262	7,097	30,239	4,315
Pork	1,154	627,738	10,083	874,875	2,599	759,584
Other meats	1,739	10,715	18,231	34,819	26,086	39,717
Total Fats	**7,199**	**839,608**	**37,557**	**567,256**	**11,836**	**1,045,318**
Tallow[a]	7,097	269,609	36,135	131,071	11,830	156,813
Lard	102	569,999	1,422	536,185	6	888,505
Total Meats and Fats	**51,342**	**2,073,804**	**322,676**	**1,848,321**	**191,999**	**1,928,780**
Total Hides	**237,875**	**49,622**	**470,340**	**22,150**	**358,397**	**48,790**
Calf and cattle	193,156	49,480	396,419	22,086	294,874	47,457
Sheepskins	44,719	142	73,354	64	63,523	1,333
Pigskins	....	....	567	....	....	....

[a] Includes beef and mutton tallow, oleo-margarine, oleo oil, and stearin from animal fats.

25 years. So far at least as concerns the present and the near future, it is evident that we are still very definitely a meat-exporting nation.

The great volume of our pork exports has a distinct bearing on the beef tariff. Pork and beef are consumed more or less interchangeably, so that neither can be wholly free from the price influences affecting the other. So long as pork is on a sub-

stantial export basis, the price in the United States cannot remain consistently higher, grade for grade, than the price for which the exportable surplus sells abroad, plus cost of shipment — this quite regardless of the duty levied upon it. It is clear at the outset, therefore, that duties upon cattle and beef cannot, for this if for no other reason, be made fully effective.

Indeed, the interrelation of beef with pork and other meats raises a question as to whether the tariff on cattle and beef can be profitably considered at all except as part of a larger study of the entire meat situation. While failure to consider this interdependence would assuredly be a grave omission, the point is one which should be treated as a part of the whole question of substitution in its relation to the cattle and beef duties, to be discussed in a later connection.[1] For pork and other meats are not the only substitutes for beef. The fact that the marked decline in per capita consumption of beef in the United States since the turn of the century has been accompanied by little or no general increase in the per capita consumption of other meats sufficiently indicates the importance of the non-meat substitutes.

We likewise produce, the table on page 95 shows, an enormous exportable surplus of tallow and lard. A tariff on these products can therefore have no effect on prices. Hides, however, present a different situation. Of these we are large importers; and

[1] See Chapter IX.

inasmuch as the hide normally accounts for some 12 per cent of the total receipts from all products of the animal, a duty on hides would tend, for a time at least, to raise the price of live cattle.[2]

The foregoing trade analysis reveals that the tariff problem with which we are dealing has two special phases. The first phase relates to live cattle. It has been shown that there has long been a special cattle import trade with adjacent countries. Though further stimulated by our transition to a beef-deficit, this trade had existed long before the deficit set in. In the earlier years of the century and again during the recent war we were importing cattle in considerable numbers quite at the same time that we were exporting beef on a large scale. This was but natural. There is no sharp natural division at our international land boundaries. The grazing lands of Canada and Mexico are only a further extension of our own economic frontier. Endowed with superior resources for fattening cattle, the United States is the natural market for the lean stock reared on the cheap grazing lands of these adjacent countries.[3]

[2] We say "for a time," because there is a question as to whether the increased production of beef necessarily accompanying any increase in the production of hides might not eventually offset, through lower beef prices, part or all of the gain from the duty on hides. For reasons already explained, however (see page 6), hides and other by-products are not included within the scope of this study.

[3] This does not, of course, explain the entire trade. Apart from the usual border trade, the propinquity of certain markets such as Buffalo tends to encourage some importation of fat and butcher stock.

Whether such animals shall be permitted to compete freely in our markets with animals produced on our own soil is obviously a special problem which touches only the North American countries.

The other phase of the problem relates to dressed beef. In this form beef may be imported from the most distant sources at a cost far below that required for the shipment of live animals. The question involved here relates to overseas countries as well as North American countries. It is a matter international, and not merely continental, in scope.

It will be convenient, therefore, in the chapters which follow, to consider these two phases of the problem separately. We say "phases" because they are not, in the last analysis, entirely distinct problems. Rather they are different aspects of the same fundamental problem. It is the problem of determining how far, considering all the interests affected, duties on beef, in whatever form it may be imported, are expedient. Let us now turn to the first aspect of the problem, the cattle tariff.

CHAPTER VI

THE CATTLE TARIFF PROBLEM

The cattle tariff problem arises from the importation of live cattle from Canada and Mexico. The likelihood of considerable imports from other regions is too remote to call for consideration. The purpose of this chapter is to show the nature of the problem — how far imports are competitive with, and how they affect, the domestic industry. The discussion will include, first, a brief description of the conditions of production in Canada and Mexico; second, an account of the origin of the problem; and third, an analysis of the effects of tariff changes since 1910 upon prices, imports, revenue, and production. Discussion and conclusions with respect to tariff policy will be reserved for Chapter X.

I. CONDITIONS OF CATTLE PRODUCTION IN ADJACENT COUNTRIES

It will aid to a better understanding of the subject if we first direct attention to some of the conditions of production in Mexico and Canada which affect the present and future competitive position of those countries. Primarily we shall be concerned with Canada.

Mexico is not at present in a position to compete

very extensively in our markets. As was shown in the previous chapter, she has in the past exported to the United States considerable quantities of cattle, mostly of an inferior type; but she has not been in a position to do so in recent years. Whereas in 1902 there were over five million cattle in the country, it is estimated that as late as 1923 there were less than two million. There is little doubt that the disturbed state of the country during much of this period contributed greatly to the decline. With the gradual restoration of order, however, the ranches are now being restocked from the United States. It is indeed possible that, given stable political conditions, the industry may very considerably expand. In some respects natural conditions are favorable to expansion. Notwithstanding the semi-tropical latitude in which the country lies, it possesses a wide variety of climate, and there are large sections, notably the interior plateaus and the southern mountain valleys, where climatic conditions are favorable to livestock.

For the present, however, the Mexican industry is not in a strong competitive position, and even as a future source of supply it is subject to important handicaps. Two especially stand out: the prevalence of insect pests and the poor quality of the herds. The most serious of these pests is the cattle-tick. Because of the prevalence of the tick, imports other than for immediate slaughter are now admitted only into certain restricted zones in the South, chiefly in the Gulf States, and there held in quaran-

tine until they have been rendered tick-free. The poor quality of the herds is also a great disadvantage and an increasingly important one. The demand in the United States is constantly for a better type of animal, a tendency to which the passing of the "Texas steer" bears witness; and Mexico cannot expect to find a favorable market for her animals in this country without improving their quality. There is evidence that she is now endeavoring to do this, and some abatement of the tick pest is undoubtedly possible. But these weaknesses in her competitive position are likely to persist for some time.

Canada's cattle industry is in a much stronger competitive position than Mexico's, but it is nevertheless subject to important handicaps. Canada possesses over nine million cattle, nearly twice as many per thousand population as does the United States, and these are of breeds similar to our own. Moreover, as has been shown, she is virtually the sole present source of our cattle imports. It is therefore Canada rather than Mexico to which chief interest attaches in the present discussion.

The conditions of production in Canada correspond in many ways to those in the United States. There is no sharp division of the cattle industry at the international boundary. In both countries the extension of grain-growing in the West has made great inroads into the range. In both, due more to this than to any other cause, the number of cattle was failing to keep pace with the increase of

population prior to the war.[1] While the area in field crops in Canada increased from 27,506,000 to 39,140,000 acres between 1908 and 1915, the number of beef cattle fell from 4,630,000 to 3,399,000 head. Canada, like the United States, produces cattle under range or semi-range conditions in the western part of the country and under mixed farming conditions in the central and eastern parts. In western Canada, as in western United States, cattle are produced under the ranching, semi-ranching, and to some extent under the mixed farming, systems; and the tendency is toward the latter two. That is to say, herding on unenclosed lands tends to give way to a system of grazing under fence in summer and supplementary hand feeding in winter, particularly in the rough areas adjacent to the great wheat sections; while in the wheat belt proper there is an increasing tendency to carry more cattle on the farms by running them on cultivated or native pastures in summer and giving them barnyard care in the winter. In Ontario and the eastern provinces, where general farming prevails, there are many local variations in type of management just as in our own farming regions; but feeding and fattening cattle, both native and western, as a part of mixed farming is the distinguishing feature of the industry.

[1] It is perhaps worth noting, however, that since western Canada was not originally stocked with cattle to the extent that was true of the United States, homesteading has not had the effect (except locally) of reducing the absolute number carried. Its effect, rather, has been to encourage the abandonment of the industry in Eastern Canada.

Nature has, however, imposed far greater limitations upon the industry in Canada than in the United States. The first of these is so obvious that there is danger of ignoring it. Canada does not possess an exploitable area comparable to that of the United States. Though the total land area of the Dominion exceeds that of the United States, the greater part of this area lies in a latitude too cold to permit of its use for agricultural or pastoral purposes. Roughly 300,000,000 acres, or about 13 per cent of the land area, are estimated to be fit for farming or grazing, and less than a fifth of this area is now under crop.[2] By contrast there are in the United States, as we have seen, over 950,000,000 acres in farm land, about half of it improved; and it is estimated that there are an additional 400,000,000 acres not in farms but more or less fit for grazing. Thus Canada's exploitable agricultural and pastoral area amounts to perhaps a fourth that of the United States.

Even such an area, were it so admirably adapted to the production of beef as our own Corn Belt or the River Plate region of South America, would be capable of producing an enormous surplus. But climatic conditions have denied to Canada advantages for fattening cattle comparable to those of the United States or Argentina. Neither of the crops best adapted and most extensively used for fattening

[2] See Canadian Department of Interior, *Canada, Natural Resources and Commerce*, 1923, p. 41; *Canadian Yearbook*, 1922-23, pp. 1 and 258; and *Annals of American Academy of Political and Social Science*, May, 1923 (issue on Canada), pp. 73 and 78.

in these latter countries can thrive in the Canadian climate. Corn, the greatest of all fattening grains and the basis of our feeding industry, cannot thrive where the climate is so cool and the growing season so short as in Canada; while alfalfa, the mainstay of the Argentine industry, is greatly hindered by winter-killing. In 1924, 1,013,900 acres were planted to corn, nearly three-fourths of this being fodder corn, as contrasted with 101,076,000 acres for the United States; while only 474,000 acres were in alfalfa. There are, to be sure, other feeds in sufficient quantity so that Canada is able to engage in fattening cattle to some extent. Primarily, however, it is a breeding rather than a fattening country.

So great, indeed, are the disadvantages for cattle feeding in Canada as compared with the United States that neither the actual nor the prospective importation of finished beef from this source, whether on or off the hoof, constitutes a very serious threat to our cattle industry. That actual imports do not do so is clear enough from the available statistics. Canada's record export of dressed beef to the United States, in the year ended March 31, 1921, was 36,000,000 pounds. To all markets combined, in the year ended March 31, 1919 (during which war-stimulated shipments overseas reached their peak), it was 128,000,000 pounds. Her record export of cattle, in the year ended March 31, 1920, was 518,000, of which perhaps a third were butcher cattle. Compared with our own annual beef pro-

duction of from six to seven *billion* pounds, such figures are obviously small.

Nor is there much reason to believe that Canada's exports of finished beef, live or dressed, to this country would become formidable in the near future even though they were admitted free of duty. Some increase in this trade could, of course, be reasonably expected. The very proximity of markets such as Buffalo and St. Paul to the farming and dairy regions of Canada makes them the natural outlet for at least a part of the Canadian surplus. As the soil in western Canada becomes exhausted by constant grain-cropping, moreover, diversified farming is certain to increase; indeed there are indications that it is already increasing in the older communities of the West.[3] This can only mean that the farmer will raise more forage and more livestock. True, such a transformation in agricultural methods can occur but slowly, especially at a time when the farmer possesses so little capital with which to diversify his operations. Yet it is highly probable that as time goes on and predatory cropping becomes less profitable, more cattle will be finished in the farming region of western Canada; and it is quite possible that the increased home consumption incident to closer settlement and increasing population will not suffice to prevent an increase in exports.

As a producer of finished beef, however, Canada

[3] See *The Round Table*, March, 1924, pp. 368–75; *Annals of the American Academy of Political Science*, May, 1923, pp. 74–81; and *The Producer*, May, 1924, pp. 5–8.

is certain to remain fundamentally handicapped. The chief feeds upon which she is forced to rely include roughages, such as clover, timothy, oat and barley straw, ensilage, and root crops; home-grown grains, especially barley and oats; purchased feeds such as corn and grain-elevator screenings; and as a supplementary ration, protein concentrates such as oilcake, cottonseed meal, and gluten meal. Corn and the protein concentrates she is in the main compelled to import from the United States. Some of these feeds are fairly good fatteners, but those which can be home-grown do not compare with corn. Not only do they result in less gain in weight, but they also produce less choice beef. During the period of free entry under the Act of 1913, for example, fat Canadian animals usually sold at Buffalo for from 50¢ to $1.00 a hundred less than similar grades of domestic animals. This was due largely to the fact that they were fed much less grain and little or no corn.[4]

In short, the feeds which Canada produces suffice very well for bringing cattle to prime condition for finishing purposes; they suffice for dairying, especially of the dual-purpose type; and they permit a limited amount of finishing. But they are not adequate in quantity and quality for the development of a formidable cattle-feeding industry. If, therefore, the Canadian industry is ever to compete seriously with our own, the competition is not likely to be in this branch of the industry.

[4] U. S. Tariff Commission, *Cattle and Beef Production in the United States*, 1922, p. 79.

As regards lean cattle the indications are that production can be more readily expanded in Canada than in the United States. The best evidence of this is to be found in the relative expansion of the industry in the two countries during the war. Between 1914 and 1919 the number of beef cattle in Canada nearly doubled, whereas in the United States the number increased by only a little more than a fourth. In proportion to the size of her industry it would thus appear that the Canadian industry is the more readily extensible — at any rate up to a certain point.[5] Indeed, the very fact that settlement of her western domain has not proceeded so far as in the United States renders it but natural that this should be the case.

How far the Canadian industry could be expanded before rapidly increasing costs set in is a matter of speculation. But it is clear enough that her maximum productive capacity is rigidly limited by the physical conditions already described and that the competition of other enterprises for the soil would

[5] In the absence of comparative cost data it is impossible to say definitely whether costs of production are higher on the whole in Canada than in the United States. Some general data purporting to show that costs are distinctly higher in the United States are contained in a recent publication of the Tariff Commission, but they fall far short of proving the point. (See U. S. Tariff Commission, *The Cattle Industries of the United States and Canada*, 1925, pp. 30–1.) Even though satisfactory data were available, however, they would be significant only in so far as they tended to reveal the elasticity of the Canadian output — that is, how readily production can be expanded — as compared with our own. It is this latter and not the mere "difference in costs" (whatever that may mean) that is of tariff significance.

halt the expansion long before it reached the maximum physically attainable. In this connection the relative smallness of the Canadian industry as compared with our own is significant. As late as 1924 there were 5,734,000 beef animals in Canada as contrasted with 33,800,000 in the United States. Thus even though the number of animals in Canada were to double, the increase would be equivalent only to an increase of about 17 per cent in our own herds.

With these conditions in mind, let us now inquire more closely into the competitive situation that grows out of them.

II. ORIGIN OF THE CATTLE TARIFF PROBLEM

It has been shown in the preceding pages that the United States has long imported a considerable number of live cattle from adjacent countries, but that the tariff imposed upon them must have been futile other than as a source of revenue so long as the country remained on an export basis, that is, until about 1910–13.[6] Duties had, to be sure, long been imposed upon cattle. But under the conditions which prevailed, the price obtained by the western cattle producer for his stockers and feeders was dependent upon the price at which our large export-

[6] Such a broad economic dictum as this should not, of course, be pressed too far, since it assumes a freedom of competition and a fluidity of trade which do not always exist. In the present instance, however, while the matter is not one susceptible of statistical proof, there is no *a priori* reason to suppose that the tariff stimulated domestic cattle prices prior to 1910 or thereabouts.

able surplus of cattle and beef sold in the world market. Hence neither cattle nor beef imports can be said to have presented any real tariff problem until comparatively recently.

The present cattle tariff problem grows out of fundamental changes in the domestic and the world beef situation prior to the war. Both at home and abroad changes in the beef situation were tending to stimulate our cattle import trade. At home the failure of beef production to keep pace with the increase of population was particularly manifesting itself, as has been shown, in a marked reduction in the supply of cattle from the range states and a rapid decline of our exportable beef surplus. Meanwhile Canada was becoming increasingly dependent upon the United States as a market for her surplus cattle. As the result partly of duties continuously in effect on cattle imported into the United States and partly of the long-standing British embargo on "store" (lean) cattle from overseas, Canada's cattle exports had long consisted mainly of fat animals sent to the United Kingdom for immediate slaughter. But with the enormous increase in supplies of dressed beef from South America and Australasia after the turn of the century, she found it increasingly difficult to dispose of the considerable surplus that still remained available for export despite increasing domestic requirements.

Imports of cattle into the United States were stimulated, therefore, both by our diminishing production of beef, which led to an increasing demand

among our cattle feeders for lean stock from adjacent countries, and by Canada's increasing difficulty in marketing her surplus overseas. Other factors, it is true, — political disorders in Mexico, a series of short feed crops in the United States, and the removal of the tariff — tended still further to stimulate imports.[7] Fundamentally, however, the situation both in Canada and in the United States was favorable to an increase of this trade, and the removal of the duty in 1913 may be accounted a tacit recognition of our increasing dependence on outside sources of supply.

The war and its aftermath brought the cattle tariff problem into the foreground of controversy. The enormous overseas demand for beef during the World War tended still further to encourage imports, especially from Canada. In their efforts to supply this demand Canada and the United States — and Mexico too, so far as her internal conditions would permit — functioned as an economic unit. In part, Canada catered to the European demand by increasing her direct exports of dressed beef overseas. In the main, however, she catered to it by shipping her surplus animals into the United States either for feeding or for immediate slaughter, thus enhancing our own exportable surplus. In some of the war years her shipments across the border did, to be sure, fall somewhat below the 1914 total of 206,000 head; but in the last year, the Canadian fiscal year ended March 31, 1919, they amounted to

[7] See what was said in Chapter V, pp. 91–4.

309,000 head. In the following year — liquidation of the herds having set in meanwhile — they reached the record total of 503,000 head. Mexico also, though her exports steadily declined, succeeded up until 1918 in exporting across the border no less than 180,000 animals annually. But she was unable to respond as did Canada to the opportunity for increased export; and having since practically ceased exporting to this country, she need not be further mentioned in connection with the present competitive situation.

For several years butcher cattle rather than stockers and feeders seem to have predominated among the imports from Canada. No precise figures are available concerning this; but since few stocker and feeder cattle normally enter over the northeast boundary (Buffalo and eastward), and since from half to two-thirds of the imports during the period 1912 to 1917 thus entered, the greater part of the imports must have been butcher animals. Indeed this is what might be expected in consequence of Canada's increasing difficulty even before the war in marketing her fat animals overseas, to which war-time shipping conditions greatly added. Yet the trade in lean cattle also increased rapidly. In the fiscal year 1914 only 28,579 cattle of all sorts entered the Dakota customs district, through which most of the imports from western Canada normally pass. By 1918 (calendar) the number had increased to 119,326, and in 1919 it reached the record total of 258,201. Many of these animals, to be

sure, went to immediate slaughter during the war period. But it is clear from official Canadian figures[8] that a large part of the increase was in lean animals. These figures show that shipments of stockers and feeders from Canadian stockyards increased until by 1919 they amounted to 132,722 head, or 52 per cent of all stockyards shipments (excluding calves). Since that time, though smaller in actual numbers, they have come to constitute some 85 or 90 per cent of the stockyards shipments.[9]

So long as the war lasted the imports from Canada awakened no serious protest. The United States had resumed its former status as a heavy beef exporter and was disposing of its surplus in a "seller's market"; the cattle industry was expanding and prosperous; and a tariff, had there been one, could not have been effective. For the time being there was no tariff problem and the subject was forgotten. But the war-time prosperity did not last. In 1920 the market collapsed and the industry was confronted by the critical conditions which we have previously described.[10] Meanwhile liquidation had begun in Canada, and in 1919 and 1920 shipments to the United States had been greater than at any

[8] *Livestock and Animal Products Statistics*, Canada, 1909–19, 1920, 1921; *Livestock Market and Meat Trade Review*, Canada, 1922, 1923, 1924. See also U. S. Tariff Commission, *The Cattle Industries of the United States and Canada*, 1925, Table 20, p. 35.

[9] It is to be noted that these figures do not include shipments from country points. It is probable that these contain a lower proportion of stockers and feeders.

[10] See Chapter IV.

time previously. They were, to be sure, very small in comparison with the domestic production. But the increased competition from this source, and — perhaps more important — the fear of serious competition from South American dressed beef, soon led to demands for tariff aid and the restoration of duties on cattle and beef.

The duty on cattle soon threw into bold relief a conflict of tariff interest in the domestic industry. In so far as the tariff tended to restrict imports of fat cattle it interfered with none of the domestic cattle interests. But its restrictive effect upon imports of lean cattle was not so uniformly advantageous. For just in so far as it tended to restrict the supply and increase the price of stockers and feeders it was a benefit to western producers but a burden to cattle-feeders in the Corn Belt. A rather special demand had developed for the Canadian feeder animals. On the whole, though the truth of this is questioned by some, they were alleged to be somewhat superior to our own: hardier; quicker to take on flesh; better-conditioned and hence adapted to short feeding; and generally well-suited, by reason of the environment in which they were produced, for feeding under conditions prevailing in certain parts of the Corn Belt.[11] With

[11] See U. S. Tariff Commission, *Cattle and Beef in the United States*, 1922, p. 79; also statements made by Gray Silver, Washington Representative of the American Farm Bureau Federation, and by the Illinois Agricultural Association, in support of applications filed with the Tariff Commission requesting an investigation looking to a reduction of the duties on stocker and feeder cattle.

the restoration of the duties, therefore, the opposition among the cattle feeders to a tariff on these animals gathered strength and finally culminated in appeals to the Tariff Commission for an investigation which, it was hoped, would bring relief under the elastic provisions of the new law.

The claims and counter-claims of the interested parties were numerous, but the basic issue was, and still remains, clear enough. Those favoring removal[12] of the duty on lean cattle maintain that the number of these animals imported is so small in comparison with the domestic trade in them that the tariff, while tending to discourage imports and hence to burden cattle-feeders accustomed to this trade, can exert scarcely any influence at all upon prices of domestic stockers and feeders and hence cannot materially benefit the range cattle industry of the United States. On the other hand, those opposing reduction of the tariff clearly imply by their references to the injury that would follow upon removal or drastic reduction of the duty that its effect is to increase domestic prices very materially; and they are naturally unwilling to concede that such burden as the duty may impose upon the cattle feeders justifies the sacrifice of their own interests.

Manifestly, two questions are involved here, one of fact, the other of policy. The first concerns the

[12] Relief through administrative order could, of course, not go beyond reduction of the duty, since under the Act of 1922 the President cannot transfer dutiable articles to the free list or vice versa.

extent to which the cattle duties actually increase domestic cattle prices. The second concerns the extent to which a tariff on cattle harmonizes with the public interest. It is only the first, however, which falls within the confines of this chapter. This involves a careful analysis of the effects of recent tariff changes.

III. EFFECTS OF TARIFF CHANGES, 1910-1925

It is no simple matter to trace the precise effects of tariff changes by appeal to experience. It is easy enough to show on grounds of logic what effects might be expected, but it is quite another matter to isolate and measure them in a particular case. So many other factors are involved that the effects of the tariff are always partly, often wholly, obscured. Nevertheless it is usually possible by resort to statistics to throw some light on this matter, and such an attempt will now be made. Primarily this will relate to the effect of tariff changes upon domestic prices, but some attention will also be given to the effect upon imports, revenue, and production. Since, for reasons already explained, only the tariff changes after 1910 or thereabouts can possess any real significance, the analysis is confined to the period 1910–25 and thus includes the Acts of 1909, 1913, 1921, and 1922.

Under these acts the duties were as follows: On cattle — *Act of 1909:* under one year old, $2 a head; over one year and valued not over $14, $3.75 a head; over one year and valued at more than $14, 27½

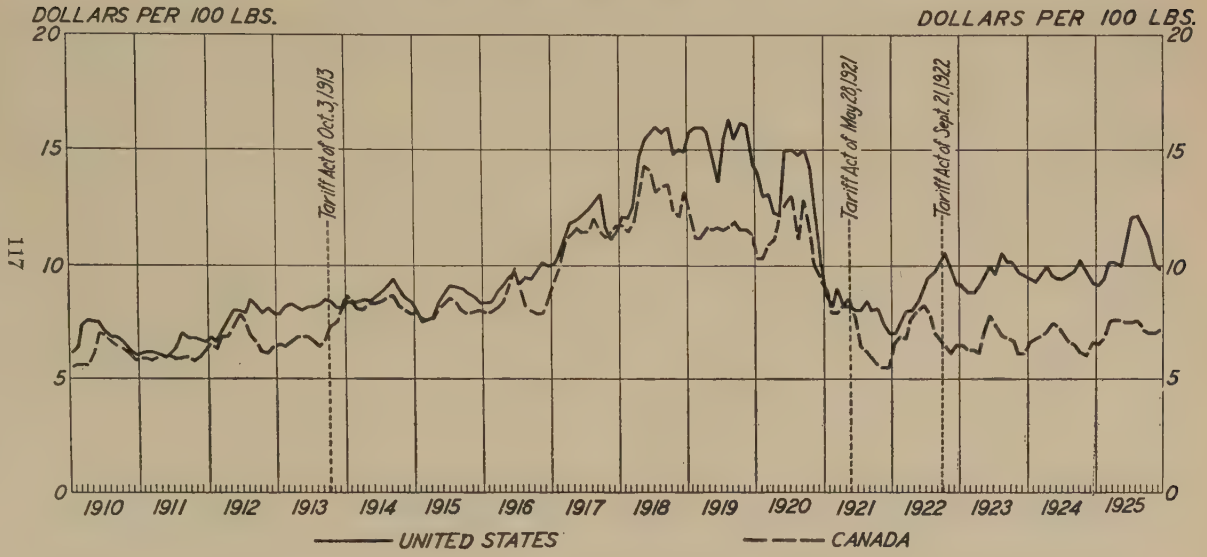
per cent ad valorem; *Act of 1913*, free; *Act of 1921*, 30 per cent ad valorem; *Act of 1922*, 1½ cents a pound on animals weighing under 1,050 pounds, 2 cents a pound on animals weighing 1,050 pounds and over. Under the Act of 1909 the specific rates on cattle amounted to about 20 per cent ad valorem on animals under one year and 28 per cent on animals over one year and valued at less than $14 per head. Under the Act of 1922 the specific duties have been equivalent to about 33 per cent on light, and 43 per cent on heavy, animals. It will thus be seen that, barring the Act of 1913, each of these tariff acts imposed higher rates of duty on cattle than did the preceding one.

A. Tariff Changes in Relation to Prices

The discussion may be begun by directing attention to the charts on pages 117 and 118.[13] The chart on page 117 compares average monthly prices of best butcher cattle, Toronto, with those of native beef steers, Chicago, during the period 1910–25. The chart on page 118 compares monthly prices of stockers and feeders, Winnipeg and Chicago, for the period 1920–25. Complete data are not available for the extension of this latter comparison into the pre-war period. Since the classes of animals compared are not identical in quality, only the variations in price relationship from time to time are significant.

[13] For the data on which these diagrams are based, see Appendix B, pp. 304–9, Tables I and II.

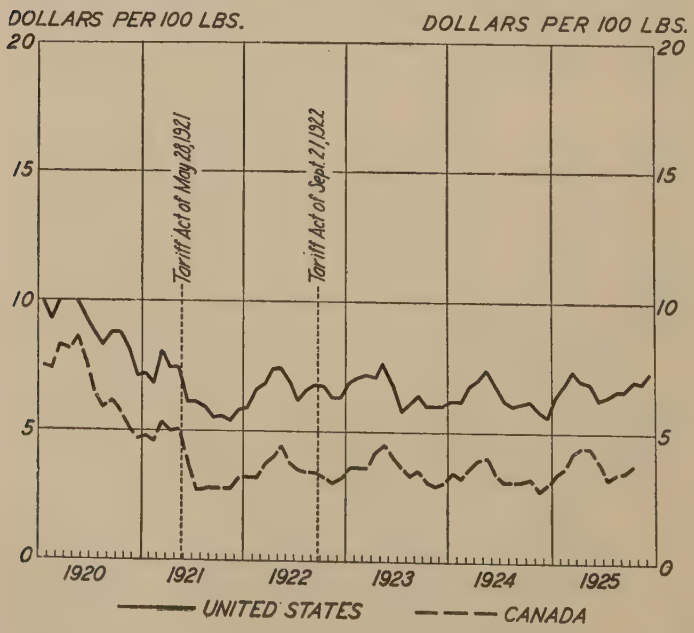
PRICES OF FAT CATTLE IN THE UNITED STATES AND CANADA, 1910–25
(Based on quotations for native beef steers at Chicago, and best butcher cattle at Toronto)



The first feature to be noted is that changes in price spread following changes in the tariff are usually in the direction logically to be expected. Glancing first at the chart on page 117, it will be seen that with the removal of the duty in October, 1913, the margin between prices of native beef steers at Chicago and

PRICES OF LEAN CATTLE IN THE UNITED STATES AND CANADA, 1920–25

(Based on stocker and feeder quotations at Chicago and Winnipeg)



best butcher cattle at Toronto, previously amounting to from $1.00 to $1.50 a hundred, practically disappeared. Again in May, 1921, prices having for some

months previously been about identical in the two markets, a distinct margin reappeared immediately following the re-imposition of the duty. And since 1922 — the duties having been further increased in September — the margin has been still wider.[14]

The foregoing observations are based upon prices of fat cattle. Glancing at the chart on page 118, it will be seen that what has been said applies also to stockers and feeders, except that the difference in prices has remained fairly constant since the middle of 1921.

It is, however, the Canadian rather than the domestic prices that appear to vary most following changes in the tariff. Again glancing at these diagrams, it will be observed that in each of the cases where a change in the price spread follows the tariff change it is the Canadian rather than the domestic price that appears to have been immediately affected. Thus, following the removal of the tariff in 1913 there was no decline in the domestic price, but there was a sharp increase in the Canadian price. Conversely, following the re-imposition of a tariff in 1921 the domestic price, instead of rising, continued its previous decline, but the Canadian price fell precipitately. From

[14] It is true that the tariff significance of this analysis does not appear so great when it is also observed that in 1912, and again in 1918, the price spread suddenly increased even though there were no changes in the tariff. The first instance may have been due in part to the increasing effectiveness of the tariff with the transition to an import basis; the second is presumably due in part to war conditions. At all events both illustrate the difficulty of isolating the effect of the tariff from those due to other causes.

the chart on page 118 it is clear that in 1921 the same thing occurred also in connection with stockers and feeders. Indeed the drop in the Canadian price of this class of animals was most striking.

The foregoing analysis suggests that for a time at least the benefit or burden of a change in the tariff falls to the Canadians. This, of course, is what we should naturally expect to happen. Suppose the duty to be increased. Assuming that the United States continues thereafter to be the most favorable market for Canadian animals, the change in the tariff will not immediately affect supply, demand, or prices in the United States. In order to sell their surplus, therefore, the Canadians must reduce their home prices by the amount of the duty. Eventually, of course, this will tend to lessen imports by forcing the less effective Canadian producers out of business and by diverting a part of the reduced exportable surplus to less favorable markets, and hence will reduce the supply available in the United States and raise the domestic price. This will be followed by increased domestic production, and this, in turn, will tend to reduce the price until finally it approaches a state of equilibrium higher, by some amount less than the increase in duty, than that which prevailed before the duty was increased. But *for a time,* at least, the Canadian will bear the burden of the duty. Conversely, the immediate benefit from a reduction of the duty will accrue to the Canadian producer rather than to the domestic consumer.

This, we say, is what should be expected assuming

that the United States continues to be the most favorable market for the Canadian surplus. Such is in fact the case. Nature has seen to that by placing our markets some 3,000 miles closer to Canada than is the United Kingdom, the only other market to which Canada has ever exported in quantity. It is true that Canada has been able to increase her cattle exports to the United Kingdom since the re-imposition of the tariff by the United States in 1921. Owing in part to the American tariff and in part to the removal of the British embargo on store cattle in April, 1923, her exports to the United Kingdom increased from only a few head in 1921 to 86,245 during the Canadian fiscal year ended March 31, 1925, whereas her exports to the United States declined from 172,317 to 124,550 head during the same period. For the ten months ended January 31, 1926, the figures were, respectively, 101,211 and 144,427 head. She has found in the British market, however, only partial relief. It has been a profitable outlet for fat animals and for feeders of the choicer grades. But shipment of lean cattle to such a distant market at a cost, including loading and landing charges, of between $4.50 and $5.00 a hundred from western Canada (that is, from $40.50 to $45.00 for a 900 pound animal), has been found unprofitable.[15] It has meant a marketing cost actually higher than the prices received for most of these animals by the producers.

[15] See U. S. Tariff Commission, *The Cattle Industries of the United States and Canada*, 1925, pp. 36–8.

The natural outlet for Canada's surplus of lean animals is the Corn Belt of the United States. Under free entry they can be sent to St. Paul or Chicago. Denied the American market, those that cannot be brought to good condition for direct export must be shipped to the Eastern Provinces, where the market is much less favorable by reason of its greater distance and the limited resources of this region for fattening. In so far as shipments of fat animals or dressed beef to the United Kingdom can be increased, an indirect outlet is created for lean animals; but it is not the natural outlet.

Nor does the evidence indicate that even in the long run the cattle duties appreciably affect domestic cattle prices. It is true that they must tend somewhat in that direction. To the extent that the less effective Canadian producers are compelled to cease operations and those who remain succeed in finding other outlets for their surplus, imports will become smaller, and hence the domestic price will become higher, than would otherwise be the case. And as we have seen, imports have appreciably declined since the restoration of the duties in 1921. But is the ultimate effect of the duty upon the domestic price great or small? After all, this is the vital question.

A cursory view of the price situation following the re-imposition of duties in 1921 at first suggests that the cattle tariff substantially affects domestic cattle prices, but upon closer analysis this proves to be inconclusive and misleading. The Emergency Tariff of 30 per cent on cattle and 2 cents a pound on beef

went into effect on May 28, 1921. Notwithstanding this, domestic cattle prices continued to decline during 1921; but they fell less precipitately than did those of Canadian animals. A comparison of the average difference in prices in the two countries from January to May inclusive with the average from June to December inclusive shows that the average price spread increased by amounts ranging from 39 cents a hundred on stockers and feeders to $1.36 a hundred on heavy steers.[16] Since Canada was, and is, on an export basis as regards cattle and beef, one might suppose, therefore, that this increase in the price spread roughly indicates the extent to which the Emergency Tariff held domestic cattle prices above the world level.[17]

[16] Based on Winnipeg and Chicago quotations.

[17] This is the line of reasoning followed in a report touching this subject made by the Tariff Commission in 1922. See U. S. Tariff Commission, *The Emergency Tariff and Its Effect Upon Cattle and Beef, Sheep and Mutton, Wool, Pork, and Miscellaneous Meats*, 1922, pp. 1–20. This report seems to leave the inference that although the effect of the cattle duties upon domestic cattle prices cannot be precisely determined, it was nevertheless substantial. Such an inference does not, however, appear to be justified. Not only is the evidence adduced inconclusive (see text below), but on one point the report appears even to be self-contradictory. For it seems to argue both that Canadians paid the duty and that Canadian prices remained on a level with world prices after the enactment of the Emergency Tariff. Obviously, to the extent that one of these things occurred the other could not. The fallacy here referred to reappears explicitly in a later report of the Tariff Commission (*Cattle and Beef in the United States*, p. 79), as follows: "Canada, with her large surplus, of course, remained on an export basis; her price levels, therefore, followed the international level, and Canadian producers had to absorb the duty to ship to the United States."

But was this increase in the price spread due to the tariff or to seasonal factors? And was it due to a halting of the decline in domestic prices or to depression of Canadian prices? In respect to both of these points the line of analysis above indicated fails to stand the test of closer inspection. As regards seasonal factors a mere glance at the charts (pages 117–8) discloses that these are so important as greatly to obscure the effect of the tariff. Actual calculation casts still further doubt on the method followed.[18] It reveals: (1) that in 1920, though there was no change in the tariff, the increase in average price spread for June-December over January-May was, for most classes of animals, about double the increase in 1921; (2) that in 1922, though the tariff was not increased until late in September, it was again about twice as great as in 1921, except as regards canners and cutters, stockers and feeders; (3) that in 1923, when no change at all occurred in the tariff, it was on the whole greater than in 1921 as regards fat steers but less in the case of other

[18] The increases in price differences, based on Chicago and Winnipeg, were as follows:

Year	Heavy steers	Medium steers	Light steers	Fat cows and heifers	Canners and cutters	Stockers and feeders
1920.....	3.43	2 27	2.10	.11	−.13	.70
1921.....	1.36	1.25	.85	.40	.41	.39
1922.....	3.35	2.40	2.16	.88	−.01	.06
1923.....	1.76	1.18	1.31	−.13	−.07	−.47
1924.....	.13	.77	1.23	−.11	.14	−.12

animals; and (4) that in 1924, when no change occurred in the tariff, it was smaller than in 1921 in all cases except that of light steers. There is clearly no consistency in such figures as applied to the effects of the tariff. If the tariff *did* increase domestic prices, this mode of analysis certainly does not demonstrate it.

Coming now to the second question raised above: Did the tariff raise (or check the decline in) domestic prices, or did it depress Canadian prices? Glancing again at the charts on pp. 47–8, it will be seen that the difference between Canadian and domestic cattle prices has been greater on the whole since than it was before the enactment of the Emergency Tariff. Since Canada is on an export basis, does this not indicate that the tariff held domestic prices above the world level? This does not follow. The assumption that because Canada is on an export basis her cattle prices necessarily remain in line with the world beef price level (that is, British prices) is scarcely tenable. Canada *is* on an export basis as regards both cattle and beef. But her peculiar dependence upon the United States market — not absolute dependence, but sufficient to make our cattle duties of primary concern to her — limits the sense in which this is true. Her lean cattle trade with the United States is largely a special trade. The situation is one, therefore, in which we should expect our cattle tariff to depress Canadian prices rather than to raise our own — this irrespective of the world beef price level. That the

Canadians did in fact bear the main burden of the duty — at least for a long time after the tariff was imposed — seems to be borne out both by our own analysis above and by that of the Tariff Commission.[19] True, as we have said, there is a tendency for the burden to be shifted to domestic consumers; but it is impossible simply by reference to prices to show how far this has occurred.

Still, what reason is there to suppose that the cattle duty does not tend in the long run substantially to increase domestic prices? The answer is that *the number of cattle imported from Canada or even available for importation is so small compared with the domestic production that restriction of the trade, or even complete prohibition, could not now have much effect in the domestic market.*

In this connection attention may be directed to the table on page 127, which compares Canada's exports with production in the United States. The most significant figures in the table are those in the next to the last column. These indicate the ratio which Canada's exports to the United States of beef in all forms bears to the total production of beef in the United States each year since 1910. It will be observed that during the entire 15 year period there were but three years (1918, 1919, and 1920) in which these exports exceeded 2 per cent, and only one (1919) in which they exceeded 4 per cent of the domestic production.

[19] U. S. Tariff Commission, *Cattle and Beef in the United States*, 1922, p. 79.

COMPARISON OF CANADIAN EXPORTS OF CATTLE AND BEEF WITH BEEF PRODUCTION IN THE UNITED STATES, 1910–1925

Year[a]	Canadian Exports[a]						United States production[c] (Thousands of pounds)	*Canadian exports of beef in all forms, as a percentage of production in the United States*	
	Cattle (Number of head)		Dressed beef (Thousands of lbs.)		Total in beef equivalent[b] (Thousands of lbs.)				
	To United States	All countries	To United States	All countries	To United States	All countries		*To United States*	*All countries*
1910...	7,576	124,923	2	974	3,411	63,436	6,712,000	*0.05*	*0.95*
1911...	9,807	61,517	6	949	4,419	31,707	6,474,000	*0.07*	*0.49*
1912...	28,268	44,296	19	1,571	12,740	23,719	5,894,000	*0.22*	*0.40*
1913...	206,446	218,929	12,638	13,133	105,539	122,598	5,887,000	*1.79*	*2.08*
1914...	183,652	185,903	17,037	18,828	99,680	111,780	5,612,000	*1.78*	*1.99*
1915...	227,184	241,560	9,433	47,423	111,666	168,203	5,785,000	*1.93*	*2.91*
1916...	164,115	166,281	10,040	45,546	83,891	128,687	6,082,000	*1.38*	*2.12*
1917...	189,226	191,356	12,672	86,865	97,823	182,243	6,649,000	*1.47*	*2.74*
1918...	308,562	311,496	33,770	127,810	172,623	283,558	7,290,000	*2.37*	*3.89*
1919...	502,588	518,352	34,619	110,048	260,784	369,224	6,255,000	*4.17*	*5.90*
1920...	295,279	297,853	36,038	53,507	168,913	201,433	6,256,000	*2.70*	*3.22*
1921...	172,981	213,484	21,648	28,404	99,490	135,147	6,168,000	*1.61*	*2.19*
1922...	228,895	258,977	18,289	29,146	121,291	158,634	6,710,000	*1.81*	*2.36*
1923...	124,168	190,166	13,845	20,577	69,721	115,660	6,877,000	*1.01*	*1.68*
1924...	125,193	218,879	8,634	26,541	64,971	135,980	7,069,000	*0.92*	*1.92*
1925[d]...	144,427[d]	251,403[d]	10,333[d]	29,380[d]	75,325[d]	155,081[d]	7,146,000	....	....

[a] Canadian exports, based on the Canadian fiscal year ending Mar. 31, are here shown as of the preceding year. Thus the exports here carried opposite the year 1910 are those for the year ended Mar. 31, 1911.

[b] Live cattle exports converted into terms of beef as follows: for exports to the United States, 450 lbs. per head; for total exports, 500 lbs. per head.

[c] U. S. Department of Agriculture, Bureau of Animal Industry, *Meat Production, Consumption and Foreign Trade in the United States, Calendar Years 1907–1925*. Includes beef imported on the hoof and immediately or eventually slaughtered in the United States; but the duplication involved is of no practical consequence for purposes of this table. Excludes veal.

[d] Exports for 10 months, April 1, 1925, through Jan. 31, 1926.

These three years, to be sure, fall within the period of free entry, but they were also years in which the war or its after-effects gave artificial stimulus to the trade and in which, except for 1920, our exports of beef in all forms exceeded our imports. Between 1914 and 1918 not even the combined influence of free trade, the rapid decline of supplies from Mexico, and the special needs of our war-stimulated beef export trade sufficed to attract imports of Canadian cattle amounting in beef equivalent to as much as 2 per cent of the domestic supply. In only three years (1918, 1919, and 1920) out of the entire 15, moreover, did Canada's *entire export* of beef, to all markets and in all forms, amount to more than 3 per cent of our own production. It thus appears that Canada's exports to the United States normally constitute some 2 per cent, and her exports to all countries some 3 per cent, of our total domestic supply. Looking at the trade as a whole, therefore, it is scarcely reasonable to suppose that even the complete exclusion of Canadian animals from our markets would for the present perceptibly increase, nor their free admission diminish, domestic prices.

In no special branch of the trade, moreover, are imports really formidable in comparison with domestic production. If there were any branch where imports might be expected to be large enough to have any considerable effect on domestic prices, it would be in the lean cattle trade. But even the imports of these animals are insignificant compared

with the domestic supply. This is disclosed by the table which follows.

NUMBER OF STOCKER AND FEEDER CATTLE IMPORTED FROM CANADA, COMPARED WITH DOMESTIC SHIPMENTS

(In thousands)

Period	Imports[a]	Domestic[b] shipments	*Imports as a percentage of domestic shipments*	Period	Imports[a]	Domestic[b] shipments	*Imports as a percentage of domestic shipments*
FISCAL YEAR				1924			
1919–20	177	4,945	*3.6*	Jan.	6	243	*2.5*
1920–21	109	3,482	*3.1*	Feb.	2	170	*1.2*
1921–22	66	4,121	*1.6*	Mar.	3	175	*1.7*
1922–23	153	4,710	*3.2*	Apr.	6	239	*2.5*
1923–24	94	4,399	*2.1*	May	10	275	*3.6*
1924–25	57	4,172	*1.4*	June	3	201	*1.5*
				July	3	169	*1.8*
1922				Aug.	10	306	*3.3*
July	12	223	*5.4*	Sept.	11	580	*1.9*
Aug.	38	469	*8.1*	Oct.	12	751	*1.6*
Sept.	44	630	*7.0*	Nov.	10	549	*1.8*
Oct.	30	864	*3.5*	Dec.	2	309	*0.6*
Nov.	25	710	*3.5*				
Dec.	12	357	*3.4*				
1923				1925			
Jan.	5	281	*1.8*	Jan.	1	207	*0.5*
Feb.	5	210	*2.4*	Feb.	1	176	*0.6*
Mar.	5	199	*2.5*	Mar.	1	241	*0.4*
Apr.	2	233	*0.9*	Apr.	2	271	*0.7*
May	2	300	*0.7*	May	3	216	*1.4*
June	1	234	*0.4*	June	1	154	*0.6*
July	2	223	*0.9*	July	2	243	*0.8*
Aug.	10	480	*2.1*	Aug.	8	360	*2.2*
Sept.	15	631	*2.4*	Sept.	8	422	*1.9*
Oct.	12	785	*1.5*	Oct.	18	697	*2.6*
Nov.	14	624	*2.2*	Nov.	13	472	*2.8*
Dec.	11	353	*3.1*	Dec.	11	333	*3.3*

[a] Data furnished by the Field Inspection Division, Bureau of Animal Industry, U. S. Department of Agriculture.

[b] Stocker and feeder shipments from the public stockyards of the United States. Source: Division of Marketing Livestock, Meats, and Wool, Bureau of Agricultural Economics, U. S. Department of Agriculture.

The figures in this table should be regarded only as an approximation, but they are nevertheless significant.[20] It will be observed that the maximum annual ratio of imports to domestic shipments during the six year period 1919–20 to 1924–25 was 3.6 per cent — this although imports were admitted free during the first two years. Nor does the

[20] They should be regarded only as an approximation for two reasons: In the first place, the distinction between feeder and slaughter cattle is itself more or less indefinite, many animals being suitable for either purpose. This presumably does not affect the domestic figures, since the very fact of shipment from the public stockyards to country points indicates the purpose for which intended; but it does affect the import figures, which are based on the stated purpose for which the animals are intended, made at the time of importation, and not upon any actual knowledge of their use after arrival at the stockyards. In this connection it is interesting to note, however, that even if all the cattle imported across the northwest boundary, *i.e.* entering the Minnesota, Dakota, Montana, Idaho, and Washington customs districts, be classed as stockers and feeders and be regarded as the total of such animals imported from Canada (very few normally entering over the northeast boundary), the ratio of imports to domestic shipments remains about the same as in the foregoing table: in 1919 (calendar), 3.7 per cent; in 1920, 3.4 per cent; in 1921, 2.6 per cent; in 1922, 3.0 per cent; in 1923, 2.1 per cent; in 1924, 2.2 per cent; and in 1925, 1.8 per cent.

In the second place, there is some question as to whether shipments from the public stockyards are an adequate measure of the real volume of domestic trade. They do not include the *direct* shipments of lean cattle from the range to the Corn Belt feeders nor the purely local and farm-to-farm trade. Since the volume of this outside trade is unknown, however, and since its bearing upon market prices as affected by imports of Canadian cattle is at all events obscure, it seems wiser to make no attempt to allow for it. The inclusion of such figures, were they known, would in any case only render more marked the contrast between imports and domestic supply which the above table already discloses.

reduction of the data to a monthly basis[21] to allow for seasonal variations substantially alter the situation except in one instance. In the summer of 1922 the ratio of imports to domestic trade *did* mount as high as 8 per cent. Unable to dispose elsewhere of her large surplus of lean animals (part of which had undoubtedly accumulated from the previous year, following the enactment of the Emergency Tariff), and faced by a feed shortage in consequence of drought, Canada was compelled to sell heavily in our markets in 1922 in spite of the tariff. But at no time since then has the monthly ratio of imports to domestic trade deviated materially from the annual average, and at no time have imports been anything but negligible in comparison with domestic shipments.

Still may it not be argued that these imports, since they are marketed largely at St. Paul, tend especially to depress prices in that market? On a particular day the receipt of considerable supplies, or the rumor of large shipments, does tend to depress prices, if only for psychological reasons. Apart, however, from minor fluctuations of this sort, which are common to all markets and occur without reference to sources of increased supply, there is not much in this argument. Price levels in the great central markets are too intimately related to permit imported supplies to throw prices in one market

[21] So far as this can be done. Monthly import data of the sort here presented are not available for the period prior to July, 1922. Annual totals were compiled by the Bureau of Animal Industry, but records of the monthly figures were not retained.

seriously out of line with those in another. Broadly speaking, there is a price equilibrium amongst these markets which discounts cost of shipment as supplies move toward Chicago. If prices at St. Paul fall to a point where they are out of line with those at Chicago, either or both of two things is apt to occur: (1) speculators begin buying for reshipment to Chicago; (2) if prices remain persistently low, country buyers are likely to be attracted to St. Paul from a greater distance than would normally be the case. For it is an interesting phenomenon of this trade that country buyers do not hesitate to go into distant markets in search of animals of the desired type and price. And, as we have seen, there is a somewhat specialized demand or the Canadian animals.

That prices in St. Paul are not in fact thrown out of line with those in Chicago when receipts from Canada are heaviest is revealed by a comparison of stocker and feeder prices in the two markets over a period of years. Prices at Chicago are normally higher; and if receipts from Canada were to throw St. Paul prices out of line this would be shown in an increase in the spread between prices in the two markets in the fall months when the bulk of the imports come in. Comparison covering the period 1921–24 inclusive reveals no such tendency. In 1921 the average price difference for the entire year was 88 cents a 100 pounds as against 82 cents for September-December; in 1922, 90 as against 92 cents; in 1923, $1.17 as against $1.19; in 1924, 72 as against 61 cents; and for the whole four-year period,

92 as against 89 cents.[22] If anything the prevailing tendency was rather the other way. Nor is it surprising that St. Paul prices do not get out of line when it is considered that receipts from Canada during the past decade have generally comprised only between 5 and 10 per cent of the total receipts at St. Paul,[23] and that the seasonal increase in these is only a part of the general seasonal increase from all sources and in all the central markets in the fall of the year.

B. Tariff Changes in Relation to Imports, Revenue, and Production

Enough has been said to render it apparent that past changes in the cattle tariff cannot have resulted in changes in imports, revenue, or production of very serious consequence to the domestic industry or the public. Imports have never been large enough in comparison with domestic production to make this possible. As regards imports and revenue, however, some effects are observable and these may be briefly noted.

Table A on page 134 shows the annual imports of cattle from all sources and from Canada since 1910, together with the revenue derived from the cattle trade. Table B on page 134 shows, by months, imports during years in which tariff changes occurred.

1. *Imports.* — It is to be observed that in two out of the three instances in which tariff changes

[22] Based on simple averages of weekly quotations for all grades of stockers and feeders.

[23] Excluding calves.

TABLE A: ANNUAL IMPORTS OF CATTLE AND DUTIES COLLECTED THEREFROM, 1910–25

Fiscal years	Number Imported		Revenue	Fiscal years	Number Imported		Revenue
	From Canada	From all countries[a]			From Canada	From all countries[a]	
1910..	5,574	195,938	$726,710	1921	307,282	329,974	[c]673,482
1911..	3,043	182,923	702,339	1921[d]	179,408	194,869	
1912..	1,350	318,372	1,214,481	1922	128,803	151,299	[d]2,072,227
1913.	29,186	421,649	1,764,659	1922[d]	206,419	238,309	
1914..	241,331	868,368	[b]568,687	1923	214,569	251,837	[d]1,327,051
1915..	191,540	538,167	[c]	1923[d]	124,932	140,539	
1916..	238,025	439,185	[c]	1924	150,740	154,857	[d]1,475,613
1917..	189,285	374,826	[c]	1924[d]	131,202	143,247	
1918..	185,089	293,719	[c]	1925		135,768	
1919..	356,834	440,399	[c]				
1920..	459,690	575,328	[c]				

[a] Almost exclusively Canada and Mexico.
[b] July 1 to October 3, inclusive, 1913.
[c] No duty imposed.
[d] Calendar year.
[e] May 28 to December 31, inclusive, 1921.

TABLE B: IMPORTS OF CATTLE BY MONTHS, 1913, 1921, AND 1922

Month	Number from Canada[a]		Number from all countries[b]		
	1921	1922	1913	1921	1922
January	15,260	2,452	24,111	17,469	2,876
February	7,319	1,959	30,630	8,066	2,482
March	10,416	1,558	36,105	11,677	2,431
April	20,168	3,181	47,708	23,674	6,139
May	12,194	3,981	68,607	14,498	12,030
June	3,089	4,710	46,993	4,152	10,240
July	5,023	16,107	38,937	5,057	18,164
August	10,546	40,959	47,014	10,948	41,565
September	18,779	52,611	64,605	18,814	58,388
October	28,527	37,985	130,639	28,534	41,012
November	35,838	28,181	123,118	37,955	28,923
December	12,249	12,735	78,470	13,793	13,829

[a] Not separately stated for 1913.
[b] Almost exclusively Canada and Mexico.

occurred, imports reacted in the direction logically to be expected. In the fiscal year 1914 they doubled over the preceding year; in the fiscal year 1922, which includes all except the first month of the

period immediately following the enactment of the Emergency Tariff, they declined by more than half. But in the fiscal year 1923, though the duty was increased in September, 1922, they nevertheless sharply increased. Reference to the monthly figures further discloses that in all three years the trend of imports *immediately* following each tariff change, that is, after September, 1913, May, 1921, and September, 1922, was in the direction to be expected. But, except in 1922, this trend coincided with what is shown by reference to the monthly figures in other years to be the normal seasonal tendency.

It is impossible, therefore, to tell how far the tariff was responsible for these changes in imports. Numerous disturbing factors to which reference has already been made complicate the situation: prior to the war, the liquidation of the Mexican herds and a series of short feed crops in the United States; during and immediately following the war, an artificial stimulus to imports, growing out of war conditions, from which a reaction would presumably have occurred even though duties had not been imposed after May, 1921. On the other hand, the increase of imports in the fiscal year 1923, following an increase of the duty in September, 1922, is probably to be explained, as was pointed out earlier, by the inability of Canadians longer to withhold shipments postponed by reason of the tariff imposed in May, 1921. In 1924 (fiscal), it will be noted, imports again dropped to the earlier level, and in 1925 they were smaller than in 1924.

Notwithstanding these disturbing influences, however, and in spite also of the primary dependence of Canada and Mexico upon the American market, it is clear enough that changes in the tariff have affected this trade. The fact that imports have declined by about half since the tariff was reimposed in 1921, while Canada's exports to the United Kingdom have increased, is unmistakable evidence of this.

2. *Revenue.* — As regards revenue it is apparent that the duties upon cattle contribute but little to our fiscal needs — roughly between $1,000,000 and $2,000,000 annually. But it will be observed that the yield has fallen within these limits every year, since 1911, in which duties have been in effect. The data do not conclusively show, therefore, whether the increased rates since the war have tended to increase the revenue yield as compared with the rates under the Act of 1909, though it seems probable that such is the case.

3. *Production.* — If it be true that domestic prices have not been much affected by changes in the tariff, it follows that domestic production cannot have been much affected. Little tariff significance attaches, therefore, to changes in the size of the industry following tariff changes, since these must have been due largely to other causes. Hence it is not surprising that the trend in numbers of cattle and in beef production exhibits no consistent relation to tariff changes since 1910. Reference to these figures, as given in the tables on pages 54 and 43, reveals that this is the case. As regards dairy cattle, it is evident

that the number of these has tended to increase more or less persistently irrespective of tariff changes. More significant, however, is the number of beef animals. On January 1, 1914, only three months after the removal of the duty, the number was somewhat less than on January 1, 1913, that is, 27,200,000 as against 27,400,000; but in the preceding years the decline had been even greater, and in the succeeding years the number rapidly increased. In 1914 the production of beef was likewise less than in 1913, that is, 5,612,000,000 as against 5,887,000,000 pounds; but here again the decline appears to be but a continuation of an earlier decline, whereas in subsequent years production increased. Had there been any tendency to liquidation in consequence of the removal of the duty, output would presumably have increased in 1914 instead of declining.

Turning now to post-war tariff changes: On January 1, 1922, notwithstanding the re-imposition of the tariff in May, 1921, the number of beef cattle was less than in the preceding year — 34,300,000 as against 34,500,000. On January 1, 1923, the duty having been further increased three months previously, the number increased once more to 35,000,000; but in 1924, though no change had been made in the tariff, the number fell to 33,800,000, and in 1925 to 31,500,000. Moreover, according to the Agricultural Yearbook, the number of beef animals in the Far Western states,[24] the region which should

[24] From Montana to New Mexico and westward to the Coast.

have benefited most from the cattle duties, has continuously declined since 1920. In 1921 these states contained 9,530,000 head; in 1922, 9,519,000; in 1923, 9,401,000; and in 1924, 9,125,000. On the other hand, the total slaughter for the entire country has continuously increased since 1921, that is, from 6,168,000,000 pounds in that year to 7,146,000,000 pounds in 1925; but this is just what might have been expected in view of the liquidation through which the industry was passing during this period. Had the industry been expanding, animals would have been withheld from slaughter for a considerable time. It is thus clear from these figures that such slight influence as the tariff may have had thus far on the size and productive capacity of the industry has been entirely overshadowed by other forces. Of course, in so far as prices may have been supported by the tariff, the tendency to further liquidation of the herds must have been checked.

IV. CONCLUSIONS

The conclusions to be drawn from the foregoing analysis of the competitive situation in the cattle trade may be set down as follows:

Imports of cattle are so small in comparison with the domestic production, and were so small even before duties were re-imposed in 1921, that it may be concluded that the cattle tariff does not appreciably increase domestic cattle prices and hence does not seriously affect any considerable domestic interest. If there has been a gain to any branch

of the industry from the duties on cattle it is difficult to trace, and it must in any event have been exceedingly small. By the same token these duties cannot now be a serious burden to the consuming public. Their immediate effects appear to have been greatly exaggerated in current tariff discussion.

There remains, however, a tariff problem connected with this trade which is bound to assume an increasing importance in the future; namely, that growing out of the importation of lean cattle as a raw material for our feeding industry. Prevented by natural handicaps from exporting finished beef to this country on any considerable scale, Canada and Mexico, but more immediately Canada, may be expected in the absence of tariff restriction to increase their future exports of lean cattle to the United States. This is almost inevitable if, in accordance with past tendency, the domestic supply of lean stock becomes increasingly inadequate for the production of beef at a moderate cost. It will naturally be resisted by the producers in our range states, and the conflict of interest between them and the Corn Belt finishers, already the source of tariff controversy, will grow.

But whether the country should welcome or discourage these cattle imports is a question of policy which falls outside the scope of this chapter. It is beyond the scope of any formula — whether it be comparison of costs or any other statistical device — designed to measure the competitive strength of the Canadian (or Mexican) industry. It is a

question of policy that can be intelligently weighed only if viewed as a part of the larger problem as to how far the importation of beef in any form is in the public interest. Meanwhile the second phase of the tariff problem remains to be considered, namely that arising from imports of dressed beef, and to this we now turn.

CHAPTER VII

DRESSED BEEF: OVERSEAS SOURCES OF SUPPLY

The first essential to an understanding of the competitive situation as it relates to dressed beef is a knowledge of the competitive position of the foreign industry. This chapter will be devoted, therefore, to a broad survey of conditions affecting the export of beef from those countries which appear to possess the greatest possibilities in this regard. Specifically, the object will be to show the present and prospective competing power of the foreign industry in relation to the United States market. What constitutes "competing power" we leave to be disclosed below.

I. SOURCES OF POSSIBLE COMPETITION

There are many countries in which the cattle industry is large; but only a few of them are significant as actual or possible sources of beef for export. The mere size of the cattle industry of a country is no indication of its competing power. The cattle population of Europe is very large, yet Europe is a deficit, not a surplus, region. Still other countries where the number is large are not significant for other reasons. To illustrate: there are in the world today, according to post-war estimates compiled

by the United States Department of Agriculture,[1] some 562,000,000 head of cattle, of which roughly 155,000,000 are located in India, 67,000,000 in the United States, 37,000,000 in Argentina, 35,000,000 in present European and Asiatic Russia, and 34,000,000 in Brazil. These countries lead all others in number of cattle. Yet two of them, India and Russia, have never produced a large surplus of beef for export, while a third, Brazil, has never exported anything like the amount that the size of her herds would suggest.

Neither the Indian nor the Russian industry is significant as a source of competition. Cattle are produced in India for use as work animals, not for food. The carcass of these animals, the eating of which is contrary to the Hindu religion and largely forgone by the Mohammedans, is not of a quality adapted to the tastes of the great beef-consuming countries of the West. Hence India, though one of the world's leading exporters of cattle hides, is not concerned in the international beef trade. As for Russia, the poor quality of her herds, the disorganization of the country, and the magnitude of her domestic requirements eliminate her as a prospective exporter in the near future. With Brazil we shall deal more fully below.

Far better than mere size of the industry as indications of potential competitive strength are the

[1] U. S. Department of Agriculture, *Foreign Crops and Markets*, June 18, 1924, Vol. 8, No. 25, pp. 536–7. Revised to include 24,675,000 milch cows in the United States, inadvertently omitted from the original.

size of the exportable surplus and the ratio of cattle to human population. Neither is, to be sure, wholly satisfactory. The amount of beef actually exported by a particular country may be small, yet the prospects of a substantial surplus in the not far distant future may be too great to be ignored. In some measure the ratio of cattle to human population meets this difficulty, but not entirely. For it is important to know not merely whether this ratio is high, but also whether the cattle yield beef of the quality demanded in Europe and the United States, whether facilities for slaughter and refrigeration are available, and whether other conditions are such as to create a reasonable expectation that the industry may soon become an important exporter of beef of suitable quality. Taken together, however, these are perhaps the best statistical indications of the countries which properly fall within the scope of this chapter.

The tables on pages 144 and 145 show the relative standing of the more important countries as regards beef exports and ratio of cattle to human population.

It will be noted that we have included in the table on page 145 the "cattle equivalent" of the sheep in each country. This, of course, assumes that the resources now devoted to sheep husbandry are also adapted to cattle husbandry, whereas in some of these countries, notably Australia and South Africa, there are semi-arid regions where this is not true. Hence the "cattle unit" basis tends to exaggerate the true cattle-carrying capacity.

EXPORTS OF FRESH AND FROZEN BEEF FROM PRINCIPAL EXPORTING COUNTRIES*

(In thousands of pounds)

Country	Average 1911–1913	1919	1920	1921	1922	1923	1924
Argentina	750,971	883,452	917,784	859,260	893,006	1,195,341	1,667,163
Australia	156,638	[a]121,079	[a]179,642	[a]124,167	[a]152,951	105,184	....
Brazil	[b]	113,831	134,255	129,689	66,664	146,817	[c]164,465
Canada	4,640	107,170	64,412	32,256	26,225	22,607	22,950
New Zealand	29,582	87,493	84,895	102,691	57,759	83,387	75,733
Union of South Africa	216	44,409	14,435	3,395	1,741	1,535	....
United States	14,886	174,427	89,649	10,341	3,911	3,386	2,631
Uruguay	57,016	176,019	215,181	161,496	....	....	....

* Data furnished by U. S. Department of Agriculture, Bureau of Agricultural Economics.

[a] Year beginning July 1.

[b] Not separately classified.

[c] Eleven months.

RATIO OF CATTLE AND "CATTLE UNITS" TO HUMAN POPULATION IN SPECIFIED COUNTRIES*

Country	Year	Cattle[a]		Sheep		"Cattle units" per 1000 persons[b]
		Number (In thousands)	Per 1000 persons	Number (In thousands)	Per 1000 persons	
Argentina	1923	37,065	4,261	36,209	4,162	4,856
Uruguay	1924	8,432	5,515	14,514	9,492	6,871
Brazil	1920	34,271	1,119	7,933	259	1,156
Australia	1923	14,337	2,544	78,803	13,985	4,542
New Zealand	1924	3,563	2,814	23,776	18,780	5,497
Union of South Africa	1923	9,315	1,344	31,696	4,574	1,997
Canada	1924	9,461	1,055	2,685	299	1,098
United States	1925	64,928	585	39,134	353	635

* Livestock data furnished by U. S. Department of Agriculture, Bureau of Agricultural Economics.

[a] Includes dairy cattle, but these also contribute to beef supply.

[b] Obtained by counting one cow as equivalent to seven sheep, in accordance with the average grazing and feeding requirements on farms in the United States.

Judged by the standards here adopted it is clear, nevertheless, that all of the overseas countries listed possess a significance as possible sources of supply for the United States which justifies closer inspection.[2]

II. ARGENTINA

The rise of Argentina at the beginning of the century from a position of comparative unimportance in the world's beef export trade to one of great

[2] Canada and the United States, already dealt with, are included in the table only for purposes of contrast.

predominance properly fastens our attention at the outset upon that country. A few figures will suffice to reveal the enormous growth of her beef-export industry. Though in proportion to her human population there were more cattle in Argentina in 1900 than there are today, her exports of beef at that time amounted to but 93,574,000 pounds, of which 36,264,000 pounds consisted of "jerked" beef.[3] By 1905 her exports had increased to 398,232,000 pounds; and by 1910, to 606,776,000 pounds. This expansion continued until in 1918, stimulated by war needs, it reached the record total, up to that time, of 1,519,838,000 pounds. By 1922 exports had declined to 893,000,000 pounds; but during the next two years they increased so rapidly that in 1924 they reached the highest point on record, namely 1,667,000,000 pounds.

The rapid rise of Argentina to her present commanding position in the international beef trade was facilitated by three circumstances. The first of these was the forced withdrawal of the United States from the European market during the first decade of the present century, owing, as we have seen, to the great expansion of our home market and to the increasing diversion of our land to crops. The second was the development of artificially refrigerated transport. It was the development of artificial refrigeration, first successfully demon-

[3] Jerked beef is a very inferior grade produced by salting and drying. Exports, confined to South American and Caribbean countries, have been of increasingly negligible importance in recent years.

strated in connection with the North American trade during the eighties and nineties, that rendered the enormous beef resources of Argentina accessible to overseas markets at a cost low enough to permit the development of a large trade. The third circumstance accounting for Argentina's rapid rise as a source of beef supply is that she possesses peculiar natural advantages for the development of a large cattle industry. It is these natural advantages in their relation to the present and future competitive position of the Argentine industry that concern us here.

The predominant position of Argentina in the world's beef export trade today is due largely to the peculiar physical advantages of the country for beef production. Among all the beef-surplus countries of the world there is none physically so well adapted to the production of so huge a surplus at so low a cost. By no means all of the country, it is true, is so adapted. In the southern half — south of the Colorado River — the sparse vegetation in consequence of the light rainfall, and in the extreme south especially, the incessant and chilling winds make the region predominantly a sheep country. North of the Colorado River conditions are more favorable to cattle production; but much of this area also, notably the semi-arid provinces in the West and the semi-tropical, tick-infested provinces of the far north, produces cattle under pronounced difficulties. It is in the humid provinces of the northeast, along the River Plate, that the great

cattle industry centers. Over 80 per cent of the cattle are located in this region, and since it is the fattening country even a higher proportion of the beef is produced there.

The peculiar physical advantages of northeastern Argentina for cattle production relate to both climate and soil. So equable and humid is the climate and so rich the soil that cattle can ordinarily be raised and fattened without shelter and without winter feeding either of grain or of other ration. It is a year long grazing country. The surface soil — a rich, black loam very like our best Corn Belt land — is underlain by a sand and gravel stratum which acts as a sort of reservoir and, except in the eastern part of Buenos Aires province where the water-table is too high, creates a condition peculiarly favorable to the growth of alfalfa as a forage for cattle. Obviously, a region so richly endowed by nature must be suitable not alone for cattle-raising but also for many branches of agriculture; and in fact there is, as we know, a great farming industry in Argentina competing with the cattle industry for the soil. In withstanding this competition, however, the cattle industry, to repeat, possesses natural advantages unequalled in any other country. These advantages have made possible a high cattle-carrying capacity under a pure grazing system. Let us now see how this intensive system of grazing, in which alfalfa plays the leading rôle, has affected the relative position of crop and animal husbandry.

In Argentina the normal tendency of grazing to

yield to farming, so far as it relates to beef production, has been counteracted by other factors. Analysis of the trend of crop and livestock production discloses that in the Argentine Republic the usual tendency for pastoral production to give way to farming has not had the effect of checking the growth of the cattle industry. This is brought out in the table on page 150, which reveals the trend of crop and animal husbandry in Argentina during the past 30 years.

If we consider the three decades as a whole, it is evident from this table that both grain growing and cattle husbandry have greatly expanded, whereas sheep husbandry has rapidly declined. There are, of course, counter-fluctuations, notably that which occurred during the war when the sheep and cattle industries made large gains at the expense of crop-raising. This exceptional situation seems, indeed, to have persisted for several years after the war; but during the past two years (1923–25) the area in crops has once more begun to expand. It will also be noted that the expansion of the cattle industry after 1908 is reflected more largely in the exports of beef than in the number of cattle in the country; indeed that the number of cattle was actually declining prior to the war. Nevertheless the broader tendency has been as we have indicated. The reduction of new lands to tillage, while it has made deep inroads into the sheep industry, has altogether failed to prevent the growth of a great beef-producing and exporting industry. On the contrary, there

Statistical Data Concerning Livestock and Animal Husbandry in Argentina*

(All figures in thousands)

I. *Acreage in Crops*

Annual Average	Wheat	Corn	Flaxseed	Oats	Alfalfa
1895–96[a]	5,584	3,074	956	[b]	1,762
1901–05	9,684	4,374	2,602	109	4,720
1906–10	14,344	7,050	3,259	897	9,155
1911–15	16,259	9,301	4,359	2,686	15,345
1916–20	16,954	8,809	3,645	2,713	[c]19,318
1921–23	15,207	7,766	4,285	2,261	[d]
1923–24	17,223	8,468	5,256	2,748	[d]
1924–25	17,755	9,143	5,980	2,647	[d]

II. *Grain Exports — In Tons*

Annual Average	Wheat	Corn	Flaxseed	Oats
1895–96[a]	532	1,571	230	3
1901–05	1,681	1,820	562	19
1906–10	2,593	2,123	770	286
1911–15	2,244	3,528	754	649
1916–20	2,904	2,279	618	473
1921–23	3,076	2,840	1,110	381
1923–24	4,424	4,561	1,472	720

III. *Number of Livestock*

Year	Cattle	Sheep	Hogs
1895	21,702	74,380	....
1908	29,117	67,212	1,404
1914	25,867	43,225	2,901
1923	37,065	36,209	1,437

IV. *Exports of Meat — In Pounds*

Year or Annual Average	Beef[e]	Mutton	Pork
1896[a]	6,606	99,439	....
1901–05	244,667	171,164	....
1906–10	442,365	157,680	[f]11,911
1911–15	825,306	130,401	[g]1,352
1916–20	1,160,450	108,910	8,864
1921	859,260	145,118	16,012
1922	893,006	180,103	16,879
1923	1,195,341	178,784	4,020
1924	1,667,163	182,353	254

* Earlier data obtained from Tornquist, *The Economic Development of the Argentine Republic during the Last Fifty Years*, 1919; subsequent figures furnished by U. S. Department of Agriculture, Bureau of Agricultural Economics.

[a] 1896–1900 omitted owing to lack of data.

[b] Not stated.

[c] Four years 1916–1919 inclusive.

[d] Not available.

[e] Not including preserved. Though exports of canned and cured beef were considerable during the war, they have probably been small since 1920.

[f] 1908 only.

[g] 1914 and 1915 only.

has been a simultaneous expansion of both crop and beef production.[4]

The explanation of this situation is to be found in the application of intensive methods of production in the cattle industry. This has been accomplished chiefly in two ways: first, by increasing the carrying capacity of the land devoted to cattle production; and second, by improving the quality of the cattle herds.

The carrying capacity of the land has been greatly increased through extension of the alfalfa area. Glancing at the table on page 150, it will be seen that the area seeded to alfalfa has been rapidly increasing during the past 30 years quite at the same time that the acreage devoted to grain growing has been increasing. This means, of course, that the margin of cultivation has been constantly extended, so that the combined area for grain growing and for cattle raising by more intensive methods has greatly increased. Between 1895 and 1910 the cultivated

[4] "At the time when agricultural colonization began," says Denis in a recent book on Argentina, "it was admitted that farming was the best way to exploit the soil, and that the Pampa would sooner or later pass from the pastoral to the agricultural cycle; or, to use the local phraseology, that the 'colony' would replace the ranch everywhere. This idea was wrong. The general rule is, on the contrary, that in its progress colonization develops a mixed type of exploitation, combining farming and breeding; either one alternates with the other in a sort of periodic rotation, as in the lucerne (alfalfa) area, or both proceed together, the farmers including breeding amongst their occupations, as in the district of the Santa Fe colonies or in the wheat area in the south of the Buenos Aires province." Denis, Pierre, *The Argentine Republic* (English version), p. 200.

area increased from 12,088,142 acres to 50,327,060 acres; while as late as 1918 it had further increased to 61,243,468 acres. As the agricultural frontier recedes, part of the land is devoted to grain-growing and part to alfalfa for cattle-raising. Yet, as we have seen, more beef is produced on the reduced acreage devoted to cattle than was formerly produced on the entire area in its virgin state. Apart from improvement in the quality of the animals, this is simply due to the fact that the carrying-capacity of the land is usually doubled or trebled as the result of the transition from coarse, native grasses to alfalfa. It is the cattle rather than the sheep industry, however, that profits from this transition, since sheep, by reason of their habit of close grazing, are not well adapted to alfalfa grazing.

In this conquest of new lands grain-growing and cattle-raising are complementary. New land can be successfully seeded to alfalfa only after it has been cropped for a number of years. Hence it is customary for ranchers to turn over successive portions of their holdings to farmers for cropping, on the understanding that such land shall be seeded to alfalfa at the end of a stipulated period. A very substantial part of Argentina's grain production, indeed, occurs on such a shifting area; and in so far as it does it is clear that grain-growing, far from preventing, actually encourages the growth of the cattle industry. In this respect it stands, of course, in contrast to the other type of grain-growing; that

is, on smaller holdings that have been carved out of the former large ranches and sold outright to farmers. On such farms, just as in the newer farming region of the United States, stock-raising is for the present more or less incidental.

The second reason for the expansion of beef production under the circumstances noted has been the marked improvement in the quality of the cattle herds. Better breeding has been an outstanding feature in the development of the Argentine industry during the past 20 years.[5] In consequence of the rapid introduction of pure-bred stock early in the century the average age of the cattle marketed has been reduced, it is estimated, by a full year. Formerly marketed at from four to six years of age, the cattle now slaughtered commonly range from 30 to 42 months. Thus the herds today, though no larger than previously, contain fewer aged cattle and a higher proportion of breeding animals. And since the better-bred animals can be matured for market at an earlier age and with but little reduction in weight, there has been a marked increase in the number slaughtered and in the quantity of beef produced. Obviously, in such a

[5] Among the factors that have been responsible for this development may be noted: the growing demand in the British market for lighter cuts; the practice introduced by the American packers, after their entry into Argentina in 1907, of purchasing cattle on the basis of quality rather than at a flat per-head rate; the favorable conditions for early maturing created by the extension of the alfalfa acreage; and finally the incentive to more efficient methods by reason of the increasing competition of grain-growing.

system of beef production, intensive feeding operations assume a greater relative importance. Hence the extension of the alfalfa acreage and the improvement of the herds have been closely associated in promoting earlier maturing for slaughter. And earlier maturing has meant a more rapid turn-over of capital than formerly, in short, a more productive cattle industry.

Argentina's possibilities of expansion of her cattle industry without rapid increases in costs appear to be far from exhausted. These possibilities lie in a number of directions. Some, such as further improvements in breeding and management and, with respect to the unbroken interior, further development of transportation and water facilities, it is sufficient merely to enumerate. There are two, however, that are of outstanding importance.

The first of these is the possibility of further expansion of the alfalfa area. There still remain in Argentina vast areas of unbroken land fit for tillage and adapted to alfalfa. Unlike the United States, Argentina still possesses a shifting agricultural frontier. This frontier, to be sure, is not sharply defined. For in addition to the vast area of unbroken land in the sub-humid interior there are millions of acres of such land in the humid region, scattered throughout the area now devoted to crop and alfalfa production.[6] But it is none the

[6] The irregular and spotted manner in which the land has been reduced to tillage in the humid region is due, in part at least, to private ownership of it in large units and to the disinclination of

less a frontier in its economic significance. It is true that the breaking up of this land is a slow process, one which at best — as the slow expansion of the cultivated area during the war illustrates — cannot respond quickly to increases in prices of agricultural products. It is also true that much of the land in the sub-humid area is less well adapted to tillage than that in the area now under cultivation; and it is not unreasonable to suppose that even in the humid region, the spotted areas remaining untilled are inferior to those now in crops and alfalfa, though here other factors are also involved.[7] But the fact remains that while it cannot proceed rapidly nor perhaps under conditions so favorable as heretofore, there is nevertheless ample room for extension of the alfalfa area and hence for expansion of the cattle industry under conditions that are advantageous in comparison with our own.

The other outstanding possibility of expansion consists in production of more beef as a part of general farming. We refer here to farming of the permanent type and not to cropping on the frontier incident to alfalfa seeding. Though there is already

the owners either to part with portions of it or to take measures to hasten its tillage under their own ownership. The normally satisfactory income to the owners and the prospect of future increase in land values afford little inducement either for sale or for immediate and complete exploitation. Hence the process of renting to crop tenants and then seeding proceeds but slowly on these holdings, and the breaking up of the estates through sale to farmers even less rapidly.

[7] See footnote 6 above.

some incidental production of cattle on the general farms, these holdings are in general understocked. Sooner or later — unless Argentina becomes in this respect an exception to the tendency in older agricultural countries like the United States — more cattle will be carried on the farms. The advantages arising from livestock production in connection with farming are, we may be reasonably certain, too important to be permanently ignored. Indeed this tendency to carry more livestock is already observable in the more thickly settled regions. In Buenos Aires province the maintenance of dual-purpose herds as the basis of a small but rapidly expanding dairy industry is contributing increasingly to the beef supply. On the larger agricultural holdings, however, where grain-growing rather than dairying is the feature, beef production is still widely neglected.

Nor is it likely that expansion, whether upon the frontier or upon the farms, will involve a rapid increase of costs for a good while to come. That they will tend to increase, it seems only reasonable to suppose. A part, perhaps the greater part, of the arable land which yet remains unbroken is, as we have said, inferior to that already under cultivation and will yield less in relation to the capital outlay in developing it. Moreover the *amount* of direct labor involved in beef production, especially as more is produced on the farms, seems likely to increase. Costs of marketing may also increase. But these are relatively minor items. After all it is the great natural advantages of Argentina for beef

production and the magnitude of her unexploited resources that count most. And these point pretty clearly to the conclusion that production can be greatly increased with but moderate increases of cost.

It appears probable, moreover, that much of Argentina's beef output will continue to be exported. The indications are that for a good while to come the supply available for export will be large. It is true that some 50 or 60 per cent of her total output is now consumed at home[8] and that the amount required for domestic consumption will increase as the population of the country continues to grow. But this appears unlikely to result in any serious curtailment of exports in the near future. The limited possibilities of industrialization in Argentina owing to lack of coal, and to the restrictive immigration policy, are important checks upon the growth of population. And even though the population continues to grow, as it presumably will, it does not follow that exports must fall off. On the contrary, the great productive capacity of the country, and the possible reduction in the meat intake of a nation where the annual per capita consumption is twice that of the United States and as much as four times that of many European countries,[9] point rather to

[8] According to a report of the U. S. Department of Agriculture, fully half of the Argentine product is consumed at home. See U. S. Department of Agriculture, *The Cattle Crisis in Argentina*, by Arner, George B. L., p. 4. Our own calculation indicates that about 60 per cent is so consumed.

[9] U. S. Department of Agriculture, Circular No. 241, *Food Animals and Meat Consumption in the United States*, May, 1924, p. 18.

the possibility of well-sustained exports for a good many years.

There is, to be sure, the further question as to whether agriculture may not come to dominate over grazing to such an extent within a decade or two as greatly to reduce the exportable beef surplus. The answer is that this is extremely doubtful in view of the peculiar advantages of the country for beef production. These advantages place Argentina in a strong position in the world's beef trade which she will be slow to abandon in favor of enterprise in which she possesses fewer advantages compared with other countries. Rather, it is probable that both her grain and her meat exports will be well sustained.

So much for the available surplus. Now what of the demand for it? Here too the conditions are favorable to a large export trade. Since the war the United Kingdom has been importing beef in larger quantities than ever before. In catering to this demand Argentina has had not only the natural advantages already described but certain others which give her the key position. In contrast to Australasia, she is not too distant from the United Kingdom to export much of her beef in the chilled form for which there is a preferred demand in the British market.[10] So great, moreover, is the volume of her trade that a full cargo can be taken on at a single port, a quick get-away made, and a regular and frequent refrigerated steamer service main-

[10] The journey from the River Plate to London requires about three weeks, as contrasted with five or six weeks from Australia.

tained.[11] Finally, the existence of year-round grazing in Argentina tends to minimize seasonal marketing and thus makes it possible for the South American packers to maintain an elaborate distributing organization of their own in the United Kingdom.[12]

Nor is the British market any longer the only outlet. Since the War the Continent has begun to import frozen beef in quantity. During the past two years the increased demands of the Continent have led to distinct improvement in the market for frozen beef and have greatly aided South America and Australasia in disposing of their surplus to better advantage. Argentina's exports of frozen beef to the Continent increased from 167,000,000 pounds in 1923 to 508,000,000 pounds in 1924 and in the latter year constituted nearly a third of her total exports. The world demand for beef tends to increase, not decrease, and Argentina is in an advantageous position to supply the demand. Broadly speaking, the existence of an adequate future market for the Argentine surplus seems assured. The question is, rather, who shall get the surplus.

III. URUGUAY

A small country about the size of the state of Missouri, with a population of less than 1,500,000, Uruguay has nevertheless attained a position of

[11] British Ministry of Agriculture and Fisheries, *Report on the Trade in Refrigerated Beef, Mutton and Lamb*, London, 1925, p. 19.

[12] *Ibid.*, pp. 26–7, pp. 32–4.

second or third rank in the world's beef export trade. True, her exports normally amount to less than one-fifth of those of Argentina; but relatively to her population and area, her cattle industry outranks that of Argentina. In a very large measure the development of the industry in Uruguay has paralleled that in Argentina and hence need not be retraced here. With the decline in the North American surplus, the advent of refrigerated transport, and the entry of foreign packers into Uruguay, the same fundamental changes occurred in the industry: improved breeds and better management, earlier maturing, more and better beef from fewer cattle, and a rapid expansion of the beef export trade. Thus, from an industry which, until shortly before the war, owed its existence largely to the export of hides, beef fats, and jerked beef, the Uruguayan cattle industry was transformed into one capable of exporting annually during and since the war roughly from 175,000,000 to 275,000,000 pounds of dressed beef.[13] Between 10 and 15 per cent of the world's beef exports now originate in this small country.

A number of factors combine to make Uruguay less important as a possible source of supply than Argentina. The most important of these, of course, is the smallness of the country. Even if it were possible to produce the bulk of her beef at a lower cost than

[13] Official figures for the period since 1921 are not available, but the unofficial figures of Weddell and Co. are: 1922 — 162,000,000 pounds; 1923 — 210,000,000 pounds; 1924 — 267,000,000 pounds.

in Argentina, her area alone would tend to limit Uruguay's competitive significance. But there is reason to believe that, upon the whole, she possesses no such advantage and may be at a slight disadvantage. True, the country is somewhat less subject to droughts than Argentina, and the methods of production are generally regarded as equally efficient. But the soil is not so rich as that in the better areas of Argentina; the carrying capacity of the land, largely natural pasture land, is somewhat less; the tick pest is more widely prevalent;[14] the ravages of the locusts are more severe; and the average quality of the beef produced, though rendered high by improved breeding and good management, is considerably lower.

Again, there is reason to believe that the competition of other enterprise may tend to restrict the future growth of the industry in Uruguay more than in Argentina. Whereas Argentina has become both a pastoral and an agricultural country, Uruguay is still almost exclusively pastoral. Her production of cereals, mostly wheat and corn, is in fact scarcely sufficient for her own domestic needs, and her exports consist almost entirely of animal products derived from her pastoral industry, of which meat, wool, and hides comprise the bulk. So great a dependence upon a few pastoral products for her prosperity, by a country containing large areas fit for cultivation, seems unlikely to continue indefinitely.

[14] About half of Uruguay is tick-free country; in Argentina the tick-free area is proportionately much greater.

Despite the opposition of the large landholders, therefore, it may be that agricultural colonization upon a substantial scale will not be much longer delayed in Uruguay, even though it involves expropriative measures.[15]

Once this extension of tillage begins, the result, quite contrary to Argentina's experience, is almost certain to be a decline in beef production. For in Uruguay — and here is the crux of the matter — the soil is for the most part not adaptable to alfalfa. Unless, therefore, some other tame forage equally serviceable can be developed,[16] the carrying capacity of the land cannot be increased by seeding to tame grass, and a simultaneous increase of both livestock and crop husbandry through the extension of the cultivated area — at least for a considerable period — can hardly be expected. Eventually, as has been true in parts of the United States, the same land might produce more beef simply as a joint-product or a by-product of farming, especially if there were also substantial progress in breeding, management, and tick eradication. But if agriculture expands, the population will increase and the amount of beef available for export may still be less than under the present regime.

Suppose, however, that agriculture does not ex-

[15] See Department of Overseas Trade, United Kingdom, *Report on the Financial and Economic Conditions in Uruguay*, September, 1923, p. 5 and pp. 14–5.

[16] It may be noted that in the semi-arid regions of our own western states no forage has thus far been discovered which thrives so well as does alfalfa.

pand, that the resistance of the great landowners to "colonization" proves too formidable: does this assure a marked growth of the cattle industry? It may be doubted. For one can hardly suppose that a country already so heavily grazed, and pursuing up-to-date methods of production, will substantially increase its beef output. True, fewer sheep and more cattle could be grazed. But in Uruguay, due in part to the natural pasture and the rolling character of the country, the sheep industry occupies a relatively stronger position than in the alfalfa area of Argentina. It is a country where sheep and cattle are run together, — where their production is more largely complementary than competitive. Hence it is probable that any extensive abandonment of sheep for cattle would be unprofitable.

IV. OTHER SOUTH AMERICAN COUNTRIES

Of the remaining South American countries Brazil is the most significant. The development by Brazil of a considerable export trade in frozen beef during the war, and the great pastoral resources of the country, have directed much discussion to her possibilities as a future source of beef supply. Much of Brazil is, of course, strictly tropical and wholly unfit for cattle. But there are nevertheless nearly 35,000,000 head of cattle in the country; and in southern and central Brazil, where most of these cattle are located, the annual slaughter including that for local consumption amounts to about 1,000,000 head annually. True, the bulk of these cattle

are of an inferior type and are slaughtered mainly for domestic consumption in the form of "jerked" beef. Yet Brazil has been able to export annually in recent years some 125 or 150 millions of pounds of frozen beef, most of this going to the European continent. She now possesses eight freezing works, with a combined capacity of about 6,000 head daily: five plants in the province of Sao Paulo (south-central Brazil), three in the province of Rio Grande do Sul (extreme southern Brazil), and one in Rio de Janeiro.

Broadly speaking, however, Brazil is to be regarded as a somewhat remote future competitor in beef. The prospect of any extensive Brazilian competition in the United States market is rendered remote by reason of the low quality of her beef. If there were normally any demand at all in the United States for the inferior frozen beef which Brazil now produces it would be from consumers whose purchasing power severely limits their consumption of domestic beef. Unfortunately for Brazil, moreover, there is little prospect of any marked and widespread improvement of quality for a considerable time. None of the country is in the tick-free zone, and the possibility of tick eradication seems remote because of the enormous area and cost involved.[17] Yet until this nuisance is either removed or greatly abated, little headway can be made in improving the quality

[17] U. S. Department of Agriculture, Circular No. 228, *The Livestock Industry in South America*, by Burk, L. B. and Russell, E. Z., 1922, p. 26.

of the cattle. Hardy breeds like the native Caracu type and the Zebu type imported from East India — prevailing types, of low beef quality — withstand such pests more or less successfully; but among the better breeds imported for improvement of the stock the mortality rate is very high. True, considerable progress has been made in Rio Grande do Sul, where good breeds have been introduced from Uruguay; but the process of acclimatization and immunization of good breeds, especially in Central Brazil, must at best be exceedingly slow. This, moreover, is but one difficulty. Others include the need of improvement of the pastures, which are less nutritious than those of Argentina and Uruguay, and the arrestive influence of habit, tradition, and political instability. Altogether, the prospect of a large production of animals even of good *freezing* quality, to say nothing of *chilled* beef, does not seem imminent.

The other South American countries, even more than Brazil, are to be regarded only as possible future competitors in the United States market. Perhaps the most important among them is Paraguay. A small country with a human population of about a million, with a cattle population of 4,300,000,[18] and with substantially the same natural advantages for beef production as Brazil, Paraguay has faced the same difficulties with respect to her cattle industry as Brazil. She has, moreover, been the victim of

[18] Estimate for 1924. See U. S. Department of Agriculture, *Foreign Crops and Markets*, June 1, 1925, p. 636.

severe political unrest. By 1921 the three American meat-packing plants established during the war had ceased to operate and were reported to be for sale, and in 1922 one of them was acquired by a British company. Though she exported some canned beef during the war, Paraguay's exports of cattle products since 1921 have been confined to hides and jerked beef. Even her live cattle exports, formerly substantial, have ceased for the present.

In Chile, Venezuela, and Colombia there are ultimate possibilities of developing beef exports, but they are too limited and remote to require discussion here.

V. AUSTRALIA

Turning now from South America to Australia, we are to deal with a country which, though it rivals Uruguay for second place in the world's beef export trade, seems on the whole not to have been endowed with advantages for beef production and export equal to those of the River Plate countries. An analysis of the physical circumstances of Australia in their relation to her present and prospective capacity to produce beef for export seems to point to this conclusion. The matter is one to which we shall give considerable emphasis because of a frequently expressed optimism regarding the prospect of expansion which seems scarcely justified by actual conditions.

Australia's significance as a potential source of beef supply is limited by the physical conditions that have dominated her economic development. Australia is remote from the principal markets of the world, and she

is on the whole physically handicapped by inadequate rainfall and a hot climate. Her area is about equal to that of the United States, but she has been far less generously endowed by Nature. About 40 per cent of the country is in the Tropical Zone and the remainder is essentially sub-tropical. Seventy per cent of the country receives an annual rainfall of less than 20 inches, while nearly 40 per cent receives less than 10 inches and is therefore barren. This is the annual average over a period of years. Unfortunately, however, the country is frequently visited by severe drought, and vast areas normally sufficiently watered to support life become for the time mere desert.

These are the fundamental facts, but they do not reveal the whole physical situation. There are wide variations in physical conditions: in topography, in geographic and seasonal distribution of the rainfall, and in climate. Stretching from the northeast corner of the continent along the eastern coast and around the southeast bend is a mountain range which rises abruptly from a narrow coastal plain averaging perhaps 100 miles in width. On the seaward side of the mountains there is moderately heavy precipitation. Beyond the mountains the precipitation grows constantly less, but for six or seven hundred miles westward, over a vast stretch of rolling plains, it continues to be sufficient in normal years to support vegetation. Gradually, however, these plains merge with an arid plateau, the great interior desert of central and western Australia.

In the west this desert-plateau gradually dips downward to the sea and culminates in a coastal plain similar to, but less fertile and less well watered than, the eastern plain. The rain belts do not, however, run wholly on a north-south line, as the foregoing might suggest. In the tropical north the precipitation is very heavy, and it tends also to increase along the south coast, especially in the southeast and southwest. Hence it is more accurate to say that the rain belts are more or less concentric, the precipitation being lightest in the interior and heaviest on the coast.

The seasonal distribution of rainfall is often, however, more important than the amount. And in this regard the southern portion of the Australian continent is more favored than the northern. The south is a region of winter rains; the north, extending well southward in the eastern part of the continent, is a region of summer rains. In the south, especially in the fertile plains of the southeast, the retention by the soil of the winter moisture, the moderate rainfall in the other seasons, and the warm climate tend to foster vegetation throughout the year. Further northward, however, the rapid evaporation minimizes the benefit from the summer rain, even though it does not suffice to prevent dense vegetation in the heavily watered extreme north and east; while the winter precipitation is so light that over vast stretches of interior plain, vegetation cannot live, despite the warmth of the season.

Finally, the effect of inadequate precipitation is

almost everywhere enhanced by the nature of the soil. There is little surface run-off, and even the small stream flow originating in the eastern mountains is soon lost by percolation. Irrigation is possible, therefore, only upon a small scale. There is, to be sure, a great artesian basin underlying much of the interior plain, but this, as we shall presently show, is an asset of only limited value.

These physical conditions have had a three-fold economic effect. They have rendered barren and useless an uncommonly large portion of an entire continent; they have rendered most of the remaining area suitable only for pastoral production; and they have rendered much of this pastoral area more suitable for sheep than for cattle. Australia is dominantly a pastoral country. It is true that in the southeastern portion — in Victoria, New South Wales, and South Australia — wheat and dairy farming, and in Western Australia wheat farming, are sufficiently important to provide a considerable surplus of wheat and of dairy products for export. Yet less than 1 per cent of the entire land area of the continent is now under crops. In the main the exploitable area, which includes chiefly the east and southeast, is pastoral; and by reason of climatic conditions which we have described, most of this area is likely so to remain. Though there is some grazing in Western Australia and Northern Territory, the real heart of this pastoral region is the vast area of rolling plains back of the eastern mountains.

Within the pastoral region natural conditions have

tended to differentiate the area adapted to sheep from that adapted to cattle. Sheep can thrive under more arid conditions and upon sparser vegetation than cattle, but they are less well adapted to a hot, humid climate. In the trans-mountain part of southern Queensland, where the climate is neither too hot nor too wet, and upon a marginal rainfall belt further to the interior of Queensland and extending well to the northward, sheep compete sharply with cattle and, still closer to the arid interior, replace them. But most of the eastern part of this semi-tropical state, from the sea well beyond the mountains, is too hot and humid for sheep. It is cattle country. On the other hand, the Temperate Zone states of New South Wales and Victoria are for the most part well adapted to sheep; and while farming and dairying are also important, sheep-raising predominates. Yet it is also true that beef cattle are produced in these states, and over much of their area climatic conditions alone would not prevent a considerable displacement of sheep by cattle. Hence we can only say that the *tendency* is for climatic conditions to segregate the cattle from the sheep areas. The area where further competition between them is climatically possible is after all substantial. That sheep have not given way to cattle in such areas is due not so much to physical conditions as to the fact that Australia's remoteness from world markets has been less of a handicap in the export of wool and mutton than of beef — a point to which we shall presently return.

Natural conditions — some favorable, others not — have not prevented Australia from attaining a position of importance as a source of beef supply. Irrespective of her future prospects, it is obvious that a country of five and a half millions of people, containing over 14 millions of cattle, and exporting between 100 and 200 millions of pounds of beef annually cannot be lightly dismissed. Within the limits of the area adapted to cattle production Australia has, indeed, many of the same advantages as Argentina. True, she possesses poorer facilities for fattening. The country is not generally adapted to alfalfa, though there is some production of it; and the natural grasses upon which most of the fattening occurs are not so satisfactory. Moreover, the devastation resulting from drought is a heavy long-run burden. Yet Australian meat exporters claim that costs of beef production in Australia are lower on the whole than in Argentina,[19] and some plausibility is given this claim by fragmentary cost data for the two countries appearing in a report of the Tariff Commission. This shows a cost of $5.40 a 100 pounds, live weight, for Queensland in 1921 and $6.60 a 100 pounds for Argentina in 1920, it being assumed that the latter cost probably changed but little in 1921.[20] The comparison, however, is based

[19] U. S. Department of Commerce, *Monthly Report on the Commerce and Industries of Australia*, by Consul Norman Anderson, Melbourne, Australia, Nov. 26, 1923.

[20] U. S. Tariff Commission, *Cattle and Beef in the United States*, p. 83. The estimate for Queensland is a private one which appears in *The Producer*, May, 1922; that for Argentina is derived from data obtained by a representative of the Tariff Commission.

largely upon estimates; and it overlooks the very important matter of difference in quality to which we refer below.

Added to her natural advantages for beef production and yet, paradoxically enough, a confession also of competitive weakness, is the government aid extended to the industry since the war. One of the most interesting features of the whole post-war international beef situation has been the inability of Australian frozen beef successfully to compete with South American beef in the British market. Efforts to relieve the severe depression in the Australian industry in consequence of this situation have included: (1) a direct bounty by the Commonwealth Government of ¼ pence (½ cent) per pound on all meat exports, — operative, however, only from the latter part of 1922 through December 31, 1923 and thereafter refused; (2) a reduction of ⅛ pence (¼ cent) per pound, that is from 2⅛ to 2 pence, in the freight charge on beef exported *via Government* steamship lines, a reduction which, despite the fact that these lines control but 7 per cent of the available refrigerated space, was subsequently met by the private lines; and (3) an arrangement by which the meat-curing companies, after a general wage reduction of 2 shillings (50 cents) per day, agreed to lower the price of curing by ⅛ pence (¼ cent) a pound.[21] The British Government has also extended assistance by the purchase of

[21] U. S. Department of Agriculture, *Foreign Crops and Markets*, April 18, 1923, Vol. 6, No. 16, p. 272.

large quantities of frozen beef for the army and tinned meat for the Admiralty.[22]

Nevertheless, Australia is in a much weaker competitive position than Argentina. The great preponderance of Argentina in the world's beef export trade is, of course, *prima facie* evidence of this. In the first place, the distinctly lower quality of the Australian beef is a marked disadvantage to her. For if her costs of production are in general lower than in Argentina — and this is certainly open to question — she is at all events compelled to sell her surplus at a lower price; and the attempt to strengthen her position in the international beef trade by resort to subsidy suggests that this price discount more than offsets any possible advantage in costs of production. In 1913 Argentine chilled hindquarters topped Australian frozen hinds in the British market on the average by 2 cents per pound, in 1922 by 4¼ cents, in 1923 by 3 cents, and in 1924 by 2¾ cents.[23] These differentials were equivalent to 20, 47, 32, and 30 per cent of the Australian price in the respective years mentioned. The difference in prices is, of course, less when the comparison of Australian prices is with Argentine frozen carcasses; but since Argentina is free to export a large part of her surplus in the chilled form and Australia is not, it is the difference in prices of Argentine *chilled* and Australian *frozen* beef that is significant.

[22] U. S. Department of Commerce, *Supplement to Commerce Reports, Trade and Economic Review for 1922, No. 18, Australia,* p. 19.

[23] Weddell and Co., *Review of the Frozen Meat Trade,* 1923, p. 8.

In the main, the lower price of the Australian beef is due to its intrinsically lower quality. Primarily this is due to the necessity of freezing it for shipment to distant markets, but not entirely. On the whole the animals themselves are of poorer quality in consequence partly of the lack of verdant feed for finishing them and partly of loss of condition in getting them to market. Transportation facilities from the interior are far from adequate, and the herds must often be driven long distances. Even when shipped they are said to be badly handled in transit.

Australia is further handicapped by higher costs of ocean transportation, owing to the longer haul, much of it through tropical seas. There was in 1923 a freight differential of more than $^1/_3$ cent per pound in favor of Argentine chilled beef, this notwithstanding a higher basic charge on chilled than on frozen beef.[24]

Finally, the seasonal character of her industry is a handicap. Not only does it involve seasonal gluts and part-time operation of the meat works, but it makes impossible the maintenance of an

[24] Weddell, *Review of the Frozen Meat Trade*, 1923, p. 9. The 1924 edition of this Review does not continue these freight rate quotations. An earlier publication by the U. S. Department of Commerce shows an advantage of 1.1 cents per pound in favor of Argentina, the rates quoted being 1.15 cents on Argentine chilled and 2.25 cents on Australian frozen beef. The former rate, however, is based on sporadic shipments via French or German boats and is not the special contract rate for the regular refrigerated steamer lines. U. S. Department of Commerce, Transportation Division, Bulletin No. 216, *Transportation in Relation to Export Trade in Agricultural Products*, April, 1922, p. 66.

elaborate system of direct distribution in the United Kingdom such as that maintained by the South American companies.

There is, moreover, little prospect that Australia's competitive position will become relatively stronger in the near future. This conclusion rests fundamentally upon her physical circumstances. Nature, as we have seen, has endowed the Australian continent with a large pastoral area, but she has also placed serious limitations, first, upon further expansion of this area, and second, upon its more intensive use. The recovery of the interior desert for grazing purposes, particularly for cattle-grazing, is a prospect too remote for serious consideration here. Likewise it is difficult to understand the optimism of writers like Taylor,[25] who anticipate a marked expansion of the cattle industry in the tropical north. If this is better country for cattle than for sheep it is nevertheless far from ideal. Some expansion is possible, of course. But the intense heat, the prevalence of animal pests and diseases,[26] and the difficult living conditions for a white population — the only kind that Australia permits — raise a serious doubt as to the prospect of much expansion in this region.

Nature has interfered with more intensive grazing upon most of the existing pastoral area in two ways: first, by creating a condition of water scarcity in the great pastoral plain west of the mountains

[25] Taylor, Griffith, *Australia, Physiographic and Economic*, 3rd Revised Edition, 1919, pp. 146, 257, and 260.

[26] See U. S. Department of Agriculture, *Yearbook*, 1914, p. 436.

even in normal years; and second, by the periodical devastation of this whole area by drought. While there is usually an abundance of stock water in the cattle country during the summer or rainy season, there is a severe scarcity in the winter, and a large part of the grass cured during the summer months is therefore unavailable for feed. This is a great drawback to extension of the industry. But the stifling effect of droughts is even more serious. Thus, during the series of droughts which began in 1895 and culminated in 1902, the number of cattle in the country declined from 11,767,488 to 7,062,742; of sheep, from 90,689,727 to 53,668,347. It was not until 1911 that the number of cattle reached the earlier total. Again, during the drought of 1914–15 the number of cattle fell from 11,483,882 to 9,931,416; the number of sheep from 85,057,402 to 69,257,189.

If water scarcity and drought have not prevented the development of a great pastoral industry, they at least account in the main for its failure to expand appreciably since the early nineties. In 1894 there were approximately 12,300,000 cattle in the country, and as late as 1923 there were about 14,300,000.[27] It is true that improvements in the technique of production and transportation have enabled Australia to increase her exports of beef since the beginning of the century beyond the extent suggested by the number of cattle. Yet her exports during the past five

[27] As regards sheep the number has, indeed, actually declined. In 1891 — the peak year as regards numbers — there were 106,421,068 sheep in the country, in 1923 about 79,000,000.

years, ranging generally from 100 to 250 millions of pounds annually, have been scarcely double those at the beginning of the century. Considering the great development of the international beef export trade during this period and the fact that Argentina, with annual exports about equal to those of Australia at the beginning of the century (that is, in the neighborhood of 100,000,000 pounds), has since increased them twentyfold, this is not a remarkable achievement.

In some measure the water difficulty has been met in Australia by artesian wells and by impounding surface water. These measures have been particularly helpful in the maintenance of stock routes to the coast. Most of the interior pastoral plain is an artesian basin, and there are also basins in West Australia. But efforts to exploit this source of supply, though actively participated in by the Government, have met with only limited success. Some bores must be abandoned altogether, others yield water unfit for stock. Many of them must be pumped, and as the water discharge subsides with the increasing number of bores, the number that must be either pumped or abandoned tends to increase.[28] Quite regardless of the cost involved, therefore, water conservation is possible only within

[28] Some of the wells, such as those containing sulphuretted hydrogen, are useless; others are fit only for wool scouring; while but few are sufficiently free from alkali for use in irrigation. Of 5,170 bores in Australia in 1921, 3,874 were in Queensland. Of these, 1,254 were flowing, 1,528 had to be pumped, and 1,092 were in progress, abandoned, or uncertain. See Commonwealth of Australia, *Official Yearbook*, 1922, pp. 433 and 436.

restricted limits. It may alleviate, but it cannot remove, the difficulties of the stockmen.

Still, what reason is there to suppose that cattle may not tend to displace sheep? The area within which both sheep and cattle thrive is, as we have seen, quite large enough to make this a pertinent question. The answer is that no such tendency is probable because, as previously stated, Australia's remoteness from Occidental markets handicaps her much less in the export of wool and mutton than of beef. Wool is non-perishable, and most of the mutton entering international trade is frozen; whereas frozen beef must compete with chilled beef in the world market. Since the River Plate countries, by reason of their great resources and geographic position, can produce and export chilled beef in great quantity and at a low cost, it follows that Australian frozen beef must suffer a great handicap. In short, it appears that Australia's geographic position is such as to give her a comparative advantage in the production of sheep rather than of cattle. Not until the effort to render practicable the export of chilled beef from Australasia to western markets meets with more success than past experience leads one to believe to be imminent, and perhaps not even then, may we expect cattle to displace sheep to any great extent in that country.

VI. NEW ZEALAND

New Zealand has most of the advantages for pastoral industry possessed by eastern Australia and

few of its disadvantages. An equable climate and an abundant rainfall throughout the year produce excellent pasture on land much of which is too rough for agriculture. At the same time, they render the country practically immune from drought, and they obviate the necessity of expensive shelter and hand feeding. Pastoral industry, therefore, greatly predominates, and the bulk of the exports — over 90 per cent — are pastoral. Among these exports, however, beef is of far less importance than sheep and dairy products. Of a group comprising the most important of New Zealand's pastoral exports, beef and hides constituted, in 1921, 5 per cent of the total value, sheep products (wool, lamb, mutton, and skins) 42 per cent, and dairy products (butter and cheese) 53 per cent. In 1922 the corresponding figures were, respectively, 2, 59, and 39 per cent.[29] For 10 years prior to the war New Zealand's exports of beef fluctuated between 25 and 50 millions of pounds, and while they have about doubled since then, they still constitute but a small part, some 3 or 4 per cent, of the world's exportable surplus.

New Zealand is to be regarded as a potential source of beef supply of relatively minor significance to American producers. Obviously her present exports are too small to rank her as a formidable competitor at this time. But neither is there much prospect that she will become one. The entire area of this small country is about equal to that of the state of

[29] British Department of Overseas Trade, *Report on Economic and Commercial Conditions in New Zealand*, July, 1923, p. 20.

Colorado and not much larger than that of the island of Great Britain. Hence, even if all of the pastoral resources of the country were devoted to beef production, she would still occupy a subordinate position in the international beef trade. There is little reason to suppose, however, that the pastoral resources of the country will soon be devoted primarily to beef production. Conditions are more favorable to other enterprise.[30]

That New Zealand is a sheep and dairy country is clear from the export ratios just given. There were, in 1924, nearly 24,000,000 sheep in this small country; and of the total number of cattle, namely, 3,563,497 head, 1,292 286 were dairy cows. In 1921, the latest year for which the figures are given, more than half of the cattle in the country were dairy animals, mainly cross-breeds.[31] It is quite true, as indeed the marked growth of her dairy industry during the past 20 years demonstrates, that much of the sheep area is also adapted to cattle. But by reason of her remoteness from the world markets, New Zealand, like Australia, is seriously handicapped in the export of beef. As a rule, her beef, all of it frozen or preserved, sells at about the same price discount as

[30] Not, however, to farming. Of the total exploitable area of 56,000,000 acres (an additional 10,000,000 acres being classed as barren) it is estimated that 28,000,000 are, or can be made, useful for agriculture. The area under cultivation — around 17,000,000 acres — has increased but little during the past 20 years. The threat to pastoral industry from the extension of grain crops does not appear to be serious. See U. S. Tariff Commission, *The Wool Growing Industry*, pp. 365–6.

[31] New Zealand, *Official Yearbook*, 1925, p. 430.

Australia's. On the other hand, in the export of wool and mutton and the less perishable dairy products, butter and cheese, remoteness is a much less serious handicap; hence New Zealand concentrates her energies upon them.[32] So long as it continues to be more advantageous for her to export sheep and dairy products, we need not trouble ourselves very greatly about her advantages for beef production as compared with those of the United States.

There is, to be sure, the prospect that her beef surplus will increase with the growth of her dairy industry. Especially is this likely to be the case where dual-purpose herds are so prevalent as in New Zealand.[33] True, much of this dairy beef is certain to be of inferior quality; but that derived from dual-purpose animals may be of fairly good grade. When one considers, however, the necessity of freezing such beef and thus further restricting the market for it, the smallness and remoteness of the country, and the competition of sheep raising, the prospect of formidable competition from New Zealand does not loom very large.

[32] Regarding New Zealand's peculiar advantages for dairying and the prospect of competition from other enterprise, see U. S. Department of Agriculture, *Foreign Crops and Markets*, May 4, 1925, "The Dairy Industry of New Zealand, a Study of Foreign Competition in Dairying," by Theodore Macklin, pp. 500–17, and especially pp. 501–2.

[33] Of the total number of dairy animals in the country in 1921, more than half were Milking Shorthorns, that is, animals of a distinctly dual-purpose type. See New Zealand, *Yearbook*, 1925, p. 430.

VII. SOUTH AFRICA

South Africa is not at present a competitor in the international beef trade, but her possibilities in this respect warrant some mention. The number of cattle in the Union increased from 5,500,000 in 1904 to 5,796,000 in 1911, and is estimated to be now over 9,000,000. Yet South Africa did not at any time prior to the war produce enough beef for her own requirements and scarcely more than does so now; though she did succeed during the war in exporting as much as 47,000,000 pounds in a single year.

The chief drawbacks to expansion of the industry in South Africa are the dryness of much of the country and the inferior quality of the cattle herds. We shall not pause here to describe in detail the physical features of the country. In some respects, though the analogy must not be overworked, they are similar to those of Australia: mountainous country bending round the southeast coast; heavy rainfall and a subtropical climate in the coastal region; beyond the mountains, high tablelands and only a summer rainfall; and still further inland, semi-desert conditions. Hence South Africa, like Australia, is by force of natural circumstances predominantly pastoral. Of the entire area of the Union less than 2 per cent is under crops, and it has been officially estimated that not over 5 per cent can ever be profitably cultivated even under irrigation.[34]

Of the remaining area that can be grazed, the greater part is better adapted to sheep than to cattle;

[34] Dominions Royal Commission, *Third Interim Report*, p. 30.

and sheep greatly predominate. There is in fact no beef-cattle region physically analogous to that of Queensland, much less to that of the River Plate countries; and in the region where the cattle population is densest — Natal, and neighboring parts of Transvaal, Orange Free State, and Cape Province — dairying has developed to a much greater extent than beef-cattle raising. Nevertheless there is room in this region for expansion in the beef-cattle herds, especially for the finishing of cattle bred elsewhere; and there are large areas in northern Transvaal, besides those outside the Union proper — in Southern Rhodesia and Southwest Africa — where cattle ranching has already made headway and can be considerably extended.[35]

There can, however, be no considerable expansion of the industry in South Africa without a marked improvement in the quality of the beef produced. There is practically no foreign market today for South African beef. So greatly does the native blood predominate among her beef herds that most of the animals are not fit even for freezing. In Southern Rhodesia, for example, the proportion of European-owned slaughter stock fit for freezing and export was recently officially estimated at one-fourth.[36] Insect and other pests are a serious impediment. During the war, when poor quality was

[35] See Bosman, A. M., "The Beef Industry in South Africa," Union of South Africa, *Department of Agriculture Journal*, February, 1924, pp. 201–12.

[36] Southern Rhodesia, *Report of Committee of Enquiry in Respect to the Cattle Industry*, 1923, p. 12.

less of a handicap, South Africa could export some of this beef;[37] today she finds it next to impossible.

Still it is quite possible that the strenuous efforts now being made to overcome these limitations and to revive and develop this industry may ultimately bear fruit. In 1923 the Government granted, and in 1924 renewed, an export bounty of ½ d. (1 cent) per pound on beef and ¼ d. (½ cent) per pound on cattle, besides undertaking in other ways to encourage the industry. One of these ways involves the granting of liberal concessions to cold storage companies in the hope that this will eventuate in a more rapid disposal of the present surplus of inferior cattle as a prerequisite to improvement in the quality of the herds. There is thus evidence of a determined effort to place the industry on a stronger basis. For the immediate future the most that can be expected is a gradual raising of the herds to satisfactory freezing quality. But there is no fundamental reason why, within the limits of the area adapted to cattle, South Africa may not also produce animals of chilling quality, in which case, it is important to note, she will not be too remote from the European market to export the chilled product. There need be no expectation, however, that South Africa will become another Argentina.

VIII. SUMMARY

In closing this descriptive analysis of the present and prospective competing power of those foreign

[37] Though at a discount of from one to two cents below prevailing prices even of Brazilian beef. See Weddell and Co., *Review of Frozen Meat Trade*, 1920, p. 7.

countries that are, by reason of their present or potential position as beef exporters, of chief significance, we may summarize what has been said briefly as follows:

1. The real significance of foreign sources of beef supply as they relate to competition in the United States market is not revealed by the total number of head of cattle in such countries, nor even by the ratio of cattle to human population. It consists, rather, in the present or prospective capacity of a given country to export to the United States, under conditions relatively more advantageous than it can be produced here or brought in from other foreign countries, beef of a quality and a price such that it will displace domestic beef in the United States market.

2. Analysis of actual conditions reveals that, singly or in combination, the following factors affect the competitive position of the various countries discussed: area, geographic position, physical conditions, cost of production and export, quality of the exportable beef, prevalence of pests and diseases, political instability, economic backwardness, and among the most important of all, the competition of other enterprises. Some of these factors are obviously interrelated.

3. Taking all of the foregoing factors into consideration, it appears that Argentina far outranks all of the other foreign countries in actual and potential competitive strength, and that the River Plate countries (Argentina and Uruguay) are likely

for a good while to be the chief source of international beef shipments.

4. So far as concerns our own market, all of the countries discussed are significant chiefly as possible rather than actual sources of supply; while some are so handicapped by physical and other circumstances as to make even the *prospect* of serious competition from them distinctly remote.

5. Nevertheless, there is little reason to doubt that some of these newer countries, notably the River Plate countries, not only produce beef more cheaply on the whole than does the United States, but what is more important, can extend their output with greater ease.

CHAPTER VIII

DRESSED BEEF: THE COMPETITIVE SITUATION

We are now in a position to inquire how far the domestic cattle industry is dependent upon a duty on dressed beef. On this point two sorts of evidence will need to be considered: (1) such statistical evidence as can be brought to bear on the matter, and (2) conditions affecting competition that cannot be shown by statistics. It need scarcely be said that the discussion will necessarily have to do with past and present conditions, together with such implications as they may contain for the immediate future. The future efficacy and public expediency of duties on cattle and beef are matters to be dealt with in subsequent chapters.

I. STATISTICAL ANALYSIS

It will make for more profitable use of statistics in the present connection if we first recognize the limitations to which they are subject.

The statistics commonly used for the purpose of revealing the status of international competition are international cost and price comparisons. Such comparisons generally afford valuable information as to competitive conditions. But any endeavor

to derive from them a figure which may be taken to represent the duty that would equalize competition must be futile, for the reason that there is no such figure. The competitive advantage of the foreign industry cannot be reduced to such a simple formula. Some domestic producers will generally be found to have an actual advantage over foreign producers; others can meet foreign competition on equal terms; while there are yet others for whom successively higher barriers are needed up to the point where the duties become prohibitive. Any duty that is imposed, provided it is effective but not prohibitive, will tend to equalize competition as between some foreign and some domestic producers. Whatever the duty, it is bound — allowing for other factors, such as freight, quality, and so on — to equal the difference between the foreign and the domestic price. To speak of "the" difference in cost of production here and abroad or "the" rate which would equalize competition is to beg the entire question.[1]

Nor, in the case of costs, are the data adequate in the present instance to furnish more than a very general indication of competitive conditions. Both the foreign and the domestic cost data are so fragmentary, so out-of-date, so largely composed of mere estimates, or so distorted and uncertain as the result of inclusion of improper or doubtful charges as to be almost useless for purposes of comparison. For

[1] For a more detailed discussion of this entire matter, see Page, Thomas Walker, *Making the Tariff in the United States*, pp. 72–99, and Wright, Philip G., *Sugar in Relation to the Tariff*, Chapter V, also pp. 237–43.

the grounds on which this statement rests the reader is referred to Appendix A of this book.

Instead of engaging in a futile and misleading attempt to measure the competitive strength of the foreign industry by formula, better use will be made of statistics if we attempt to show the effects of past changes in the tariff upon imports and domestic prices.[2] It is here that price data can be put to most effective use; though even this sort of analysis is always obscured by disturbing influences which make it difficult to isolate the effects of changes in the tariff from those due to other causes.

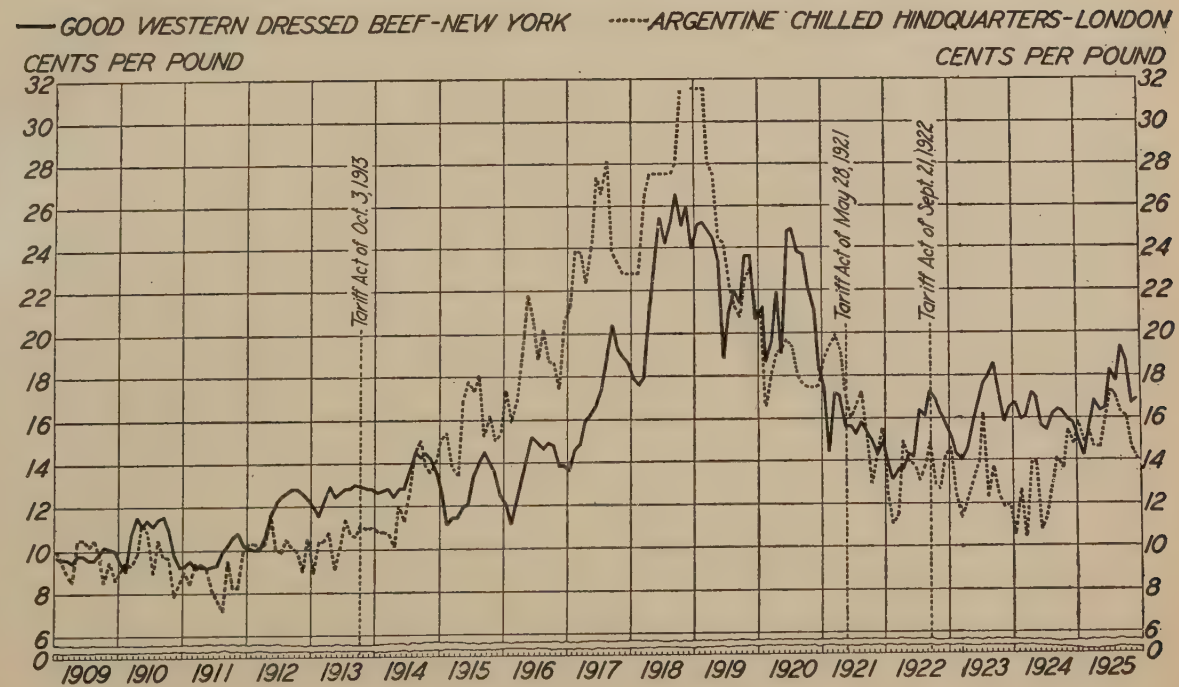
In analyzing the effects of past tariff changes as they relate to the cattle industry attention may be confined to the period since 1909. Prior to that time we were on a heavy export basis, so that changes in the duties were not of practical significance. The period since 1909 includes the Acts of 1909, 1913, 1921, and 1922. In these Acts the duties on fresh beef were as follows: 1909, 1½ cents a pound; 1913, free; 1921, 2 cents a pound; 1922, 3 cents a pound.

Statistical analysis suggests that the beef duty has had some effect on imports, but fails to show how far it has raised domestic prices. The data that bear upon this point are shown in the charts on pages 190 and 191 and the table on page 193.[3] The chart on

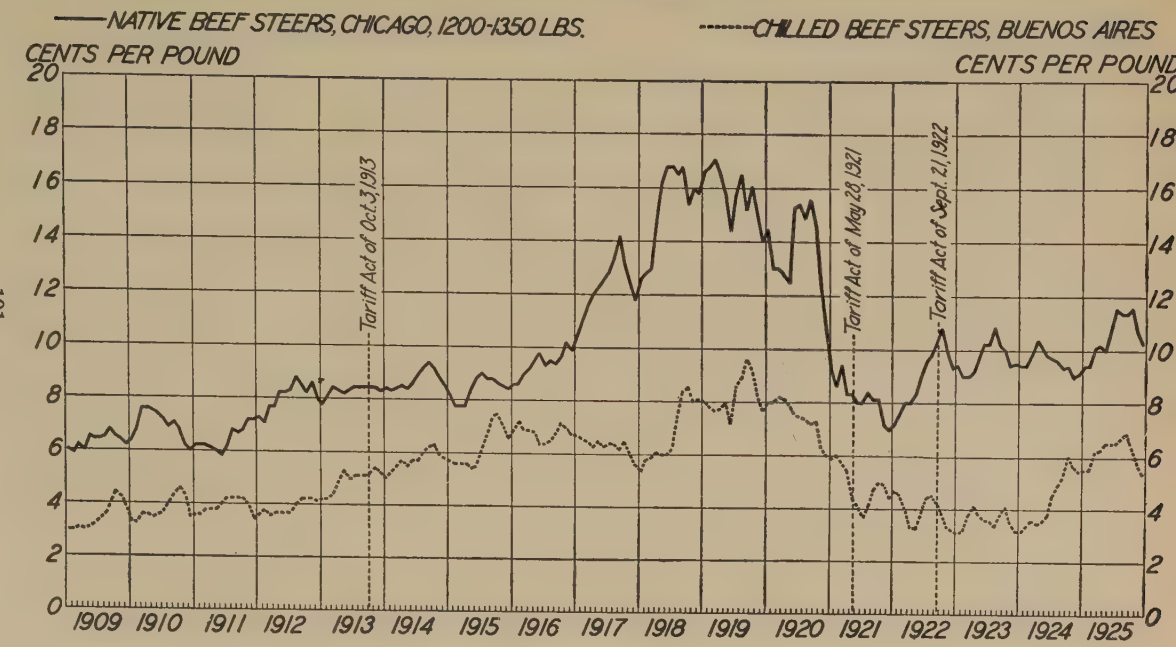
[2] The effects of tariff changes upon domestic production have been discussed in an earlier connection. See pp. 136–9. As regards revenue, the amount derived from imports of dressed beef — since 1921, from a quarter to a half million dollars — is so small that we need not pause to discuss this effect of the tariff.

[3] For the original data on which the charts are based, see Appendix B, pp. 310–15, Tables III and IV.

PRICES OF DOMESTIC BEEF IN NEW YORK AND OF ARGENTINE BEEF IN LONDON, 1909–25



PRICES OF DOMESTIC STEERS IN CHICAGO AND ARGENTINE STEERS IN BUENOS AIRES, 1909–25



page 190 compares prices of good western dressed beef, New York, and Argentine chilled hindquarters, London, from 1909 to 1925. The chart on page 191 compares prices of native beef steers, Chicago, and chilled beef steers, Buenos Aires, from 1909 to 1925. The table on page 193 shows the monthly imports of fresh beef into the United States since 1913 — the first year for which they are separately stated.

Before proceeding with the analysis, it should be explained that the selection of Argentine cattle and beef for the international price comparison rests on the fact that Argentina, though she is not our chief competitor as measured by actual imports, is the chief potential source of supply and the most significant in the present connection. It should also be explained that imports of Argentine beef into the United States are too small and sporadic for quotation in the New York market, and Argentine prices are not available; hence the use of British prices of Argentine beef. But inasmuch as landing charges from Buenos Aires to either country would be approximately the same, the British price may be taken as a rough indication of what the Argentine beef would cost, exclusive of the duty, at New York.[4] Finally, it is important to note that since neither the cattle nor the beef prices are strictly comparable, it is their relative trends, not the absolute difference between them, that is significant.

Let us begin by examining the diagrams objectively

[4] Ignoring, of course, the further question as to how far such beef would be marketable in the United States. See below, pp. 201–8.

IMPORTS OF FRESH BEEF AND VEAL INTO THE UNITED STATES, 1913–1925*

(In thousands of pounds)

MONTH	1913[a]	1914	1915	1916	1917	1918	1919
January		12,747	25,461	11,116	107	123	3,659
February		15,281	6,347	7,050	27	892	3,745
March		23,597	14,806	2,138	472	253	3,140
April		28,150	8,420	4,300	371	1,260	3,355
May		34,332	3,858	479	494	1,429	3,718
June		30,207	15,595	1,916	973	1,867	1,538
July	642	32,267	867	3,175	376	1,024	2,794
August	1,152	14,724	6,839	2,528	645	1,650	3,055
September	2,010	12,364	4,694	1,842	4,261	3,486	3,357
October	5,677	17,217	14,307	2,154	3,969	2,487	3,158
November	10,857	13,712	13,062	1,410	8,794	5,208	3,577
December	15,484	19,721	4,334	1,664	1,583	3,660	3,366
TOTAL	35,822	254,319	118,590	39,772	22,072	23,339	38,462

MONTH	1920	1921	1922	1923	1924	1925
January	2,717	4,273	867	669	1,065	592
February	2,276	1,168	536	565	1,182	553
March	2,982	1,741	1,004	947	1,952	753
April	5,196	2,572	2,221	1,590	2,450	1,589
May	4,139	3,293	2,756	1,485	2,810	1,762
June	5,819	1,856	3,143	1,058	2,642	1,167
July	2,779	1,923	3,576	1,650	1,668	1,469
August	5,619	3,141	2,362	1,932	1,368	963
September	5,808	2,066	10,533	3,542	696	1,122
October	5,251	3,562	4,504	3,174	941	3,033
November	5,437	3,361	3,146	1,387	745	1,250
December	2,159	3,422	2,046	1,357	585	1,617
TOTAL	50,182	32,378	36,694	19,356	18,104	15,870

* Mostly beef.

[a] Included in "All other meat products," prior to July 1, 1913.

and without reference to the tariff. Glancing at the chart on page 190 it will be observed that from 1909 to 1912 prices of good western dressed beef at New

York and of Argentine chilled hindquarters, London, approximated each other, but that from the summer of 1912 to the summer of 1914 the New York price was in the neighborhood of two cents a pound higher than the London price. With the outbreak of the war the London price rapidly rose, but prices in the United States were not much disturbed owing to our small export trade. In 1916, however, when high prices in Europe began to attract North American beef, there was a decided strengthening of domestic prices; and with the entrance of the United States into the war and the increasing premium on North American beef by reason of shipping difficulties, domestic prices increased by leaps and bounds. Nevertheless, owing to marine shipping costs, London prices remained well above the New York level until the end of the war. Then began a rapid decline in both markets in the course of which the New York price not only rose above the London price but for a time in 1920, following a violent upward reaction, exceeded the London price by a margin of from five to six cents a pound. This was followed by a still more violent decline in the New York price. Throughout most of 1921 it was again lower than the London price. Thereafter it recovered somewhat, whereas the London price continued to decline until the latter part of 1924, so that there was for nearly two years a substantial margin between the two. Since the fall of 1924, however, the London price has once more risen much closer to the New York level.

Turning now to the chart on page 191, it will be observed that in a general way this reflects the situation revealed in the chart on page 190. In 1912 the margin between prices of cattle in Argentina and the United States widened somewhat, due to increasing domestic prices. In the early part of the war period prices of Argentine animals approached the Chicago level; but from 1916 to the end of the war the premium on North American beef resulted in a rapid increase in domestic cattle prices, whereas Argentine prices, owing to shipping scarcity, failed to rise further in response to the European demand until the end of the war. In 1919 prices commenced to decline in both countries, and by 1921 both had fallen approximately to their pre-war level, with the margin between them about the same as before the war. From 1922 until the latter part of 1924 the margin again widened, owing partly to a rise in the domestic price and partly to the further decline of the Argentine price. Since the recovery of Argentine prices toward the end of 1924, however, following two severe crisis years, the relative situation has been about as it stood before the war.

Now as to the bearing of the whole upon the tariff. Observing first the period before and after removal of the duty in October, 1913, it will be seen that neither of the above charts suggests that the margin between domestic and foreign prices was affected by the tariff change. From the summer of 1912 until the summer of 1914 the margin between them remained about the same; and although the margin

for a year or two thereafter tended to become narrower this was due to the rise of foreign prices in response to war conditions, and not to any decline in domestic prices. What clearly *did* happen with the removal of the duty was an increase in imports. For a year or more previous to its removal domestic prices had been increasing; but as there was no increase in imports during this time it must be assumed that the tariff of 1½ cents a pound, shipping costs amounting to perhaps 1 to 1½ cents, and other factors[5] sufficed to offset the apparent advantage in favor of Argentina. With the removal of the tariff, imports began immediately to increase (see the table on page 193). In the calendar year 1914 they amounted to 254,000,000 pounds and in 1915 to 119,000,000 pounds; and as we have elsewhere shown, the greater part came from South America. Under the price conditions which prevailed at that time it is clear that in the absence of a duty a certain amount of foreign beef could be profitably imported.

From 1916 to the close of the war the demands of the European market were so great that in spite of the wide differential between Argentine and domestic cattle prices very little beef was sent to the United States. Instead, both countries were exporting heavily to Europe. Even as late as 1920, when throughout half the year domestic prices of beef were some five or six cents a pound above British (see the chart on page 190), imports increased scarcely at all, though there was still no duty in effect. This,

[5] See below, pp. 201–20.

however, may have been due in part to the shortness of the period.

Turning now to the period before and after the re-imposition of the duty in May, 1921, no immediate effects upon the price situation are to be observed. British prices of Argentine beef did, to be sure, decline more rapidly throughout the year than did prices in this country. But it is probable that de-control of the British price, which culminated in March, followed by de-control of refrigerated tonnage in April, had much to do with this, since these measures had tended previously to arrest the decline of British prices.[6] It is also noteworthy that the margin between domestic and Argentine prices of cattle showed on the whole no tendency to widen during the year. And as imports had previously been negligible even under free trade, any effect that the restoration of the duty may have had upon them cannot be observed in the statistics.

With the partial recovery of domestic prices in 1922 and the further decline of foreign prices, however, the margin between the two once more widened and, as we have seen, remained wide until the latter part of 1924. From the middle of 1922 on, prices of domestic beef at New York exceeded those of Argentine beef in London on the average by more than 3 cents a pound, with the margin ranging as high as 6.14 cents; while domestic cattle prices exceeded Argentine on the average by more

[6] Regarding the effect of these measures upon prices, see Weddell and Co., *Review of the Frozen Meat Trade*, 1921, p. 1 and pp. 8–10.

than $6.00 a hundred. Meanwhile the duty on beef was increased to three cents a pound in September, 1922. Under these conditions imports remained negligible. How extensive they would have become had there been no duty is a matter of conjecture; but certain it is that the duty, shipping costs, and other factors affecting the competitive situation[7] together sufficed to keep out foreign beef despite the wide difference in prices. And as imports had increased after the removal of the duty in 1913, at a time when the margin between domestic and foreign prices was considerably less, the presumption is that the duty must have had some effect on imports in 1922–24. Whatever service it may have performed, however, as an emergency device during those years has now been fulfilled. Since the summer of 1924, prices of Argentine beef (London) — which had previously fallen to the pre-war level — have recovered in considerable measure, so that the margin between them and prices of domestic beef has been about what it was before the war, from one to three cents a pound.

There is little doubt that such restriction of imports as has resulted from the duty on beef has thus far had but slight effect on domestic prices. It has, of course, tended to raise prices, but the tendency has not been strong. Before giving reasons for this conclusion, however, it is important to guard against superficial interpretation of the above charts as regards the effect of the duty on domestic prices.

It need scarcely be said that the mere trend of

[7] See below, pp. 201–20.

domestic prices before and after a tariff change is not of itself conclusive. Glancing again at the diagrams it will be seen that domestic prices of cattle and beef did not decline following the removal of the tariff in 1913; that notwithstanding the re-imposition of duties in May, 1921, they continued to decline until the end of the year; but that they rose to a higher level in 1922 even before the further increase of the tariff in September and have since stood at about the same level. These are, except in the last instance, precisely the opposite conditions to those which one would expect to prevail if the tariff were the controlling influence.

Even the recovery of domestic prices in 1922 is misleading. For while this may have been in part the ultimate effect of the re-imposition of the tariff in May, 1921, it is altogether likely that the general industrial recovery and the stimulus to purchasing power of consumers were chiefly responsible. In 1921 the industrial depression had reached its lowest point. Throughout 1922 there was a marked recovery. During the year the general wholesale price index moved upward from 138 to 156 (1913 = 100).[8] But more significant still, production, employment, and hence the aggregate purchasing power of consumers, increased. According to the *Federal Reserve Bulletin* the monthly index of production increased from 87 to 116 and of employment from 85 to 98 (1919 = 100) in the course of the year;[9] while a

[8] U. S. Department of Labor, *Wholesale Prices*, 1890–1923, p. 19.
[9] *Federal Reserve Bulletin*, December, 1923, pp. 1299 and 1273.

report of the National Industrial Conference Board reveals that in 23 industries the index number for employment increased from 76 to 86 (June, 1920 = 100) during the year, and for total payroll from 58 to 71.[10] That the industrial revival stimulated the consumption of beef is evident enough from the increase of nearly a half billion pounds in the estimated domestic consumption as compared with the previous year, at prices which tended to rise throughout the year. Manifestly, it is necessary to guard against a merely superficial interpretation of the price data in the present connection.

Yet what reason is there to suppose that prices in the United States have *not* been very considerably increased in consequence of the beef duty?

The very fact that the industry has only recently shifted to an import basis and is still virtually at the point of balance between surplus and deficit renders it doubtful whether the duties that have been imposed have thus far had more than a negligible effect on domestic prices. For a short time prior to the removal of the duty in 1913, perhaps two or three years in all, when imports were beginning to approximate or exceed exports, the duty may have had some slight effect. Similarly, it might be presumed that the duties in effect since 1921 have tended somewhat to sustain domestic prices. But on the face of it, it is extremely doubtful whether

[10] National Industrial Conference Board, *Wages, Hours and Employment in American Manufacturing Industries*, Report No. 62, p. 11.

the amount of beef that has been kept out of our markets by reason of the tariff would have been sufficient seriously to disturb prices in a country that produces around seven billions of pounds annually.

More especially does it seem doubtful when consideration is given to factors other than the tariff that have a distinct bearing on the competitive situation.[11] It is with these that the remainder of this chapter will be concerned.

II. FACTORS IN COMPETITION THAT CANNOT BE SHOWN BY STATISTICS

The flow of trade between nations does not necessarily hinge upon mere cost and price differentials. Factors that are not susceptible of statistical measurement often exert a potent influence on competition. In respect to beef some of these factors are too important to be ignored.

The domestic market for frozen, or semi-frozen, grass-fed beef, such as would be imported from overseas, has always been small owing to a prejudice against it among American consumers. The effect of this prejudice was clearly manifest in the experience of the U. S. Government in disposing of its surplus of frozen beef at the close of the war. In 1919 this surplus was about 34,000,000 pounds. After futile attempts during the summer and fall to dispose of it at 16½ cents per pound, the War Department, through its

[11] Still another reason for doubting whether domestic prices are much affected is discussed in the chapter which follows. See pp. 225–30.

Director of Sales, issued an announcement on November 29,[12] offering it for sale at 20 per cent less than current Chicago quotations on dressed beef, medium steers. The announcement stated that "the beef offered for sale * * * was butchered from steers of medium and good grades, and ranges in weight from 475 to 600 lbs. per carcass. Having been placed in storage during the months of January, February and March of 1919 — months during which the cattle marketed are corn and hay-fed — its average quality is better than that of beef which is on commercial markets, since the latter beef is grass-fed."

Every effort seems to have been made to push the sale of this beef. Municipalities, community buying organizations, public institutions, hotels and restaurants, and retailers were urged to buy. Attempts were likewise made to sell in quantity to the Navy Department and the Shipping Board. But these efforts were largely futile. On March 1, 1920, there were still 30,000,000 pounds on hand. Meanwhile, storage charges were accumulating at a monthly rate of about 1 cent a pound, and as the period of storage lengthened — it was already from 12 to 15 months — the lawful market for the beef was curtailed because of legislation in many states prohibiting the sale of products held in cold storage beyond a stipulated period.

Finally, early in April, it was decided to accept a pending offer from the Belgian Government, and

[12] U. S. War Department, Office of Director of Sales, Publicity Statement No. 257.

15,000,000 pounds were thus disposed of at prices ranging from 15 to 16 cents per pound. Faced with the necessity of promptly moving the remainder, the Department then offered it at 10½ cents per pound. This offer came at a time when fresh steer carcass of medium and good quality was bringing from 17½ to 21½ cents per pound in the Chicago market. Under these conditions the packing companies began to purchase, and by the early part of May the last of the surplus had been sold.[13] The aggregate amount of beef involved was never large, of course, as compared with our total consumption; but the difficulty in disposing of it shows clearly how domestic consumers regard such beef.

Our post-war experience with frozen lamb and mutton has been similar. In the latter part of 1921 and early in 1922 some 116,000,000 pounds were imported as the result of efforts to move heavy war stocks in the hands of the British Government. But there was so little demand for it in this country that more than 60 per cent had to be re-exported.[14]

The limited demand for frozen grass-fed beef in the United States is due in part to the inferiority of such beef and in part to popular habit. The inferiority in quality is the result both of the grass ration and of the freezing process. Grass-fed carcass is

[13] Whether the packers were able to re-sell any of it in the frozen form is not known, but the probability is that the bulk was converted into sausage.

[14] U. S. Tariff Commission, *Report to Senate on Operation of Rates in the Emergency Tariff Act*, Senate Document No. 224, June 27, 1922, p. 77.

likely to be less thick in flesh around the loins, ribs, round and chucks, less bright as regards both meat and fat, less well marbled with fat throughout the choicer portions, and in general less firm and hence less likely to hold up well in trade. Freezing is an added handicap. Beef that has been frozen is generally "flatter," less juicy, and less palatable than fresh beef. In thawing it out there is a loss of juices and of weight, and the carcass tends to become pale and soft. The Latin countries of Europe have long been poor markets for frozen beef, owing, it is said, to their desire for the blood flavor in their meat — though their recently increased imports of it indicate some abatement of this prejudice.

It would be easy, however, to exaggerate the defects of quality. Habit and prejudice are perhaps more important. The very appearance of the beef is such as to encourage discrimination against it and is perhaps a greater drawback than its intrinsic inferiority. American consumers have long been accustomed to fresh meat. If they cannot buy fresh, grain-fed beef, they can have pork, mutton, lamb, or other foods the merits of which as substitutes for meat are so persistently urged upon the consumer. They are unaccustomed to frozen beef and on the whole they are reluctant to buy it.

But would most American consumers refuse such beef if the price were much lower than that of fresh beef? The indications are that as regards strictly frozen, grass-fed beef they would do so. This does not mean that there is no market whatever for such

beef nor even that a very considerable quantity might not be taken under sufficiently favorable conditions. The very fact that in the fiscal years 1914 and 1915 a total of some 330,000,000 pounds of frozen beef were imported and sold in the domestic market shows the contrary. It is true that conditions at that time were especially favorable to importation owing to the relative shortage of domestic beef to which we have previously alluded.[15] It is also true that much of this beef went to the hotel and restaurant trade and that all of it had to be offered at a substantial discount below the price of domestic beef before it could be disposed of. The fact remains, however, that it was sold. Nor, again, is it intended to imply that in time there may not come to be a large market for frozen beef in this country. On the contrary, it is to be presumed that the growing pressure of population upon our food resources will eventually abate much of the prejudice against it, just as occurred in the United Kingdom. All we are saying is that for the present there is only a comparatively small market for such beef in the United States. Even under the exceptional conditions which prevailed in 1914–15, imports amounted to but little more than 3 per cent of the domestic production.

Nor is there much evidence that the discrimination against beef of this type is as yet diminishing. On the contrary, a prominent official of one of the largest packing companies not long ago stated that

[15] See p. 92.

"the American people as a whole will not buy frozen beef or mutton and much of the meat that is frozen is put in that form temporarily for later manufacture into sausage." He also states that, "it is becoming increasingly difficult to market grass-fed or unfinished beef. * * * Consumers are willing to pay several dollars per hundredweight more for the carcasses from finished animals than for those from grass. For example, during the past season native beef carcasses sold freely in New York at satisfactory prices while good grass beef was dragging on the market with wholesale prices five to eight cents a pound lower."[16]

What has been said relates only to *frozen* grass-fed beef. Would it prevent our taking large quantities of *chilled* beef such as might be brought in from South America? If this beef is grass-fed, it is nevertheless derived from well-finished, well-bred animals; and if it were promptly marketed in the chilled condition, would there not be a considerable demand for it? Undoubtedly it would be more likely to command a market in the United States than would frozen beef. Yet it faces handicaps which tend greatly to limit the present demand and to check the future extension of the market. For although

[16] Munnecke, Victor H., Vice-President of Armour and Co., in one of a series of lectures on the packing industry by officials in the industry, given in the spring of 1923 under the joint auspices of the School of Commerce and Administration of the University of Chicago and the Institute of American Meat Packers: *The Packing Industry*, University of Chicago Press, 1924, pp. 151–2. See also Clemen, *The American Livestock and Meat Industry*, pp. 265–6.

designated as "chilled," such beef is usually partly frozen even when landed. This is because the long voyage necessitates chilling to a temperature of from 29° or 30° F., while the temperature at which chilled beef is usually carried in domestic trade is from 34° to 38°. Moreover, the longer the delay in disposing of the beef after landing the greater the amount of freezing essential to its preservation. Broadly speaking, if fresh beef is not sold within a month from the time of slaughter it must be completely frozen; though the very best quality can be held somewhat longer, subject to deterioration. The journey of meat cargoes from the River Plate to New York would require at least 15 days. This would leave but a short time to dispose of the beef in the chilled condition, at most two weeks, and even then it would be quite inferior in quality and salability to the *fresh* chilled beef to which our consumers are accustomed.

If American consumers were inclined to accept frozen or semi-frozen beef, this delay, though involving loss through deterioration, would not be serious. It would then be possible to postpone forced sales by freezing the beef and holding it in cold storage. In the United Kingdom this is actually done.[17] Far from accepting frozen beef in quantity,

[17] Even in the United Kingdom, however, the price discrimination by reason of the period and conditions of refrigeration is marked. Thus Weddell and Co. report that in 1921 Canadian grain-fed beef frequently sold above Argentine chilled beef in the British market by from 2d. to 3d. per pound. This, they state, was chiefly because of its brighter appearance owing to the higher temperature at which it could be carried on the shorter voyage. Weddell and Co., *Review of the Frozen Meat Trade*, 1921, p. 17.

however, American consumers are inclined to insist that even their chilled beef shall be strictly fresh. Unless it is sold to the retail trade within two weeks after slaughter, fresh beef begins to deteriorate, and the trade begins to discriminate against it.[18] This largely accounts for the fact that New York prices of steer carcass are normally on a lower level than those of corresponding grades in the Chicago market, despite freight costs from Chicago to New York. It requires a week or more to get the beef to New York and ready for sale, and prices must then be adjusted in accordance with the condition of the beef and the necessity for prompt sale.[19]

We are obliged to conclude, therefore, that although American consumers will presumably buy increasing quantities of frozen and chilled beef if it is granted free entry into our markets, unlike the British consumers they have not yet reached the point where they will readily do so. This tendency to discriminate against such beef is a very important factor in the competitive situation.

Another obstacle to importation of beef from overseas arises from the large demand for kosher beef. Kosher beef is consumed by the orthodox Jewish population. It consists of the forequarters of animals slaughtered, prepared, and consumed under conditions conforming to religious requirements. One of these requirements is that the beef shall be con-

[18] Putnam, George E., *Supplying Britain's Meat*, 1923, pp. 89, 139.

[19] See University of Chicago and Institute of American Meat Packers, *The Packing Industry*, pp. 83 and 329.

sumed within 72 hours after slaughter. Otherwise it must be washed and blessed by the rabbi every third day thereafter until the twelfth day, after which time it is no longer "kosher," that is, ceremonially clean, and may not be consumed. It is of course obvious that under such conditions the beef consumed by our orthodox Jewish population cannot be imported from the River Plate or any other distant source.[20]

This is a more important factor in the competitive situation than might at first be supposed. Consider for example New York City, which is perhaps the most important zone of potential competition from overseas. In 1923, 473,100 carcasses were shipped into New York from the West, whereas 511,290 carcasses were slaughtered in and around New York.[21] Thus about 52 per cent of the carcasses consumed in the vicinity of New York City were locally slaughtered. If allowance be made for the fact that these are heavier than those shipped in, and deduction be made for some 8,000,000 pounds of beef cuts brought in from the West, probably at least 55 per cent of the total consumption of beef

[20] At various times attempts have been made to introduce into the United Kingdom beef koshered in South America, but they have been unsuccessful. This has been due partly to failure to secure sufficient relaxation of the religious ban and partly to persistence of prejudice against it amongst the consumers for whom intended. See Critchell and Raymond, *A History of the Frozen Meat Trade*, pp. 280–2.

[21] The latter figure consists of the number slaughtered under both Federal and local inspection in Manhattan, Brooklyn, Newark, and Jersey City.

was locally slaughtered. While there are no precise figures, officials of the Department of Agriculture estimate that about 80 per cent of this local slaughter is occasioned by the demand for kosher beef.[22] This would be equivalent to 44 per cent of the entire consumption. It may therefore be estimated that between 40 and 50 per cent of the beef consumed in the vicinity of New York City comes from kosher animals. That it does not all become kosher beef, but only the forequarters, does not matter in the present connection, since the entire carcass is thrown on the market as the result of this local slaughter.

As regards other seaboard cities there are no estimates of the percentage of the total consumption that is attributable to the kosher demand. Since practically all of the larger cities contain a considerable Jewish population, however, this demand must in the aggregate substantially reduce the potential market for imported beef in the very heart of the beef-deficit area, the industrial East.

Again, circumstances connected with the large and well-established beef export trade between the River Plate and the United Kingdom tend to prevent diversion of exports to the United States. One of these circumstances is the existence of better communications with the United Kingdom. This applies especially to refrigerated steamer service. The shipment of great quantities of chilled beef overseas requires steamers especially designed for that purpose, and

[22] Data obtained from the U. S. Department of Agriculture, Bureau of Agricultural Economics, Livestock, Meats and Wool Division.

a large fleet now plies between South America and the United Kingdom. This fleet is British-owned. On the surface, there is no good reason why part of the tonnage should not be diverted to the United States if export to this country were profitable; nor why American interests should not furnish their own tonnage. Actually, however, either alternative would present difficulties. It is quite possible that any diversion of space to the United States great enough seriously to diminish British meat supplies would result in intervention by the British Government in the interest of British consumers.

At any rate it is noteworthy that in its *Interim Report on Meat* in 1920, a British Sub-Committee of the Standing Committee on Trusts, referring to the South American meat trade, recommended that "such relations should be established between the Government and British shipowners as would remove from the latter any temptation, through the offer of higher freight rates, to divert part of our meat supplies to other countries or to sell their insulated ships to foreign meat or shipping companies."[23] Again, the Committee recommended "that the control of insulated shipping would afford one effective means of preventing British meat supplies from falling under the domination of particular interests, and that, accordingly, the Government should maintain such relations with the shipowners as would prevent the diversion of meat supplies from the

[23] Sub-Committee of the Standing Committee on Trusts, United Kingdom, *Interim Report on Meat*, Cmd. 1057, 1920, p. 8.

United Kingdom and the wholesale transfer of British insulated tonnage to foreign ownership."[24] It would still be possible, of course, for non-British interests to provide their own tonnage; but unless there were reason to believe that the meat trade with the United States would rapidly expand, they might well hesitate to assume the risks involved.

The existence of established marketing facilities is also an important matter. It is highly essential in marketing a product so perishable as chilled beef that distribution be prompt and efficient. It is for this reason that the South American packers have been compelled to establish their own selling organizations in the British market.[25] The American packers owning plants in South America would perhaps be able to use their existing marketing organization in the United States in case they deemed it advantageous to import beef into their home market; but the other South American packers would be faced with the necessity of erecting, under precarious conditions, elaborate sales organizations of their own. Of course it is true that neither this handicap nor the British ownership of insulated tonnage would prevent importation of beef in quantity from South America if other conditions were sufficiently favorable. Yet they are obstacles that must be taken into account.

Finally, there is a question as to how the international

[24] *Ibid.*, p. 13.

[25] See Putnam, George E., *Supplying Britain's Meat*, 1923, pp. 40 and 69.

position of the American packers might affect imports. We have referred elsewhere to the strong position of the large packers in the domestic beef-packing industry.[26] We did not, however, direct attention to their foreign interests. As late as 1920 the American packers controlled about 60 per cent of the beef output of Argentina and Uruguay, and about 75 per cent of the plants built or under construction in Brazil. Since that time British interests, which control the bulk of the remaining output, have increased their share of the trade somewhat; but as late as 1924 between 52 and 53 per cent of the subscribed capital in *Argentine* packing plants was still American.[27] In other countries also — notably in Australia, Canada, and Great Britain — the American packers have extensive producing or distributing interests. Thus they are in a strong position internationally as well as in the domestic trade. It is important, therefore, to consider whether this situation might not create still another obstacle to imports, particularly imports from South America.

In 1918–19 the Federal Trade Commission made a special investigation of the packing industry. As the result of its inquiry the Commission charged five large domestic packers with restraint of trade in meat and other livestock and food products.[28]

[26] See pp. 35–7.

[27] Source: *Ministerio de Agricultura de Argentina.* See U. S. Department of Agriculture, *Foreign Crops and Markets,* May 18, 1925, p. 573.

[28] Federal Trade Commission, *Report on the Meat Packing Industry,* 1918–19, Vols. I–VI.

Among the specific charges in support of this general finding, most of them relating to restraint of domestic trade, the Commission alleged that these large packers had combined with certain foreign companies to restrict and control shipments from South America to the United States and other countries.[29] In this connection it pointed to the existence of an international meat export pool covering exports from Argentina and Uruguay, and operating through the agreed apportionment amongst its members of the insulated shipping tonnage plying from South American ports. The evidence of this agreement consisted of private memoranda taken from the packers' files in which appeared extensive discussion of matters relating to the agreement.[30] The memoranda did not show the percentage allotment agreed upon, except for tentative figures discussed in conference, to be applied to exports to the United States; but they did mention the London meetings "at which evidently the principal decisions of the pool were reached."[31] And since the packers themselves have not denied the existence of the pool, but rather sought to justify it, the fact may be taken as established.

In 1920 a British official committee of inquiry concluded, in respect to the South American pool, that "rivalry in the purchase of cattle ceases to be necessary, and as each of the companies in the

[29] *Ibid.*, Part I, p. 32 and pp. 160–86; Part II, p. 27 and pp. 99–107.
[30] *Ibid.*, Part II, pp. 99–107.
[31] *Ibid.*, Part II, p. 107.

'Conference' has full knowledge of what meat is coming forward and what the others are doing, there need be no rivalry in selling."[32] The committee appears, however, to have been more concerned over the dominant position of the American packers in the pool than it was over the existence of the pool as such. "Security for sufficient supplies of beef at reasonable prices," the report states, "depends on the maintenance of the British companies now operating in South America and on *their release from their present dependence on the moderation of the American companies.*" (Italics ours.)[33]

The packers have admitted the existence of an agreement covering apportionment of insulated shipping space to the United Kingdom, but they deny that it enables them to control prices either of livestock or of meat. They assert that the agreement, countenanced by British law, does not result in regulation of the quantity of meat exported by them individually or collectively, since the total amount

[32] Sub-Committee of Standing Committee on Trusts, United Kingdom, *Interim Report on Meat*, Cmd. 1,057, p. 6.

[33] *Ibid.*, p. 7. In 1925 the Royal Commission on Food Prices, discussing this point, said in part: "* * * the fear that the Argentine trade would be completely dominated by the American companies has been dispelled for the moment by the rapid growth of the Union Cold Storage Company. It is essential, however, that future developments should be closely watched by the Food Council since it might become necessary for the Government to intervene either by acquiring a controlling interest in British companies operating in Argentina, or in some other way, if at any time the supply of chilled and frozen meat to this country should come to be dominated by adverse trading combinations." *Report of British Royal Commission on Food Prices*, Cmd. 2,390, Vol. I, pp. 119–20.

of space available from time to time fluctuates and each company is required to pay for its allotted percentage of the total whether it be filled or not. They further assert that the business of supplying great quantities of a commodity so perishable as chilled beef to a market 6,000 miles away requires a continuous arrangement whereby adequate shipping space shall be available at all times, and the outbreak of price wars, to the ultimate loss both of livestock producers and meat consumers, prevented. They point out, further, that even if they were in collusion in bidding for livestock supplies in South America — which they deny — they could not control prices in the British market, owing to the competition from home-killed beef and imports from the Dominions, which together amount to some 60 or 65 per cent of the total consumption.[34]

The matter of control of supplies and prices is further discussed in two recent British official reports. In 1925 the Royal Commission on Food Prices published its findings.[35] The Commission expressed the view that concerted price-fixing by the South American companies in bidding for livestock would be impossible over any considerable period and was not actually attempted by these companies. But on

[34] For further details concerning the position of the packers, see Swift and Co., *Analysis and Criticism of Part II of the Report of the Federal Trade Commission on the Meat Packing Industry*, Nov. 25, 1918, pp. 62–5; and Putnam, George E. (Consulting Economist to Swift and Co.), *Supplying Britain's Meat*, pp. 120–37.

[35] *First Report of the Royal Commission on Food Prices*, United Kingdom, 1925, Cmd. 2,390, Vol. I.

the other hand, it was of the opinion that the export pool *does* result in the regulation of supplies forthcoming from South America and hence the demand for cattle.[36] On the whole, however, the Commission was inclined to the view that such regulation of supplies, if properly supervised by the British Government, is in the interest of British consumers. It was of the opinion, moreover, that there is real rivalry between the British and the American members of the pool.[37]

Another report touching upon this matter was published in 1925 by the Ministry of Agriculture and Fisheries.[38] The conclusions expressed in this report are substantially in agreement with those of

[36] In regard to this matter the Commission pointed out that "since there is no shortage in the total amount of freight space available for bringing chilled beef into this country, the main factor that determines the quantity to be shipped is naturally a desire on the part of the refrigerating companies to maintain their business on a profitable basis. For example, if the Committee [the Freight Committee of the Pool] considered that cattle in Argentina were too dear in relation to prices on Smithfield [the central British market in London], they could arrange with the shipping companies to reduce the total tonnage below the normal programme. This adjustment would reduce supplies on Smithfield and at the same time restrict the demand in Argentina. Thus, indirectly, the refrigerating companies are able to exercise a very considerable influence on the price paid to the producer in Argentina and the price paid by the consumer in this country." *Ibid.*, p. 117.

[37] *Ibid.*, p. 117. The fact is, indeed, that the conference breaks down from time to time as, for example, in 1911, 1913, and 1925. Apparently the share of the trade obtained by the American packers markedly increased in 1925. See U. S. Department of Commerce, Foodstuffs Division, *Special Circular No. 143*, April, 1926.

[38] Ministry of Agriculture and Fisheries, United Kingdom, *Report on the Trade in Refrigerated Beef, Mutton and Lamb.*

the Royal Food Commission and are based in part upon the earlier findings of that Commission.[39]

It is not the purpose and it would exceed the limits of this study to enter into a detailed discussion of the question as to whether, and if so how far, the South American export pool actually restricts competition in buying cattle and selling beef. It is clear enough at all events that the official inquiries of the American and British governments have convinced them that the pool results, in greater or less degree, in restraint of competition. We must at least recognize the possibility, therefore, that such restraint — whatever its extent or its advantages and disadvantages — may actually be exercised.

Suppose that this were the case. The question would then arise as to how it might affect exports to the United States even though they were admitted free of duty. It would be idle to dwell at length on

[39] "There are grounds for uneasiness regarding chilled meat supplies," says the report, "but, in this case, there are limiting factors, for though the American companies constituting the South American group are powerful, and two important, firms, namely, Armour and Morris, have recently amalgamated, they are not the sole operators on the market; there is a parallel British combination * * * *. The high degree of perishableness of chilled meat, and the 'waywardness' of the market, impose limits to any price-fixing policy, which is again affected by competition of fresh-killed supplies of frozen meat." *Ibid.*, p. 53.

In an earlier paragraph, however, the following appears: "All that can be said is that, if a working agreement does or were to exist among the South American companies as to prices to be paid to the producer and as to quantities to be shipped, their ownership both of works and means of distribution would place them in an unassailable position in the chilled beef trade." *Ibid.*, pp. 52–3.

so speculative a matter; but it will do no harm to call attention to some of the factors in the situation.

Simple economic reasoning would lead us to suppose that in such circumstances the American packers would be inclined to import beef from their South American plants — so far as a market could be found for it in this country. For we should naturally expect them to derive their supplies from the cheapest source, whether domestic or foreign; and if the supply for this market could be obtained more cheaply from their South American plants, we should expect them certainly to take care of our increasing future requirements in this manner even if they did not abandon some of their existing domestic plants. But on the other hand, any extensive importation of beef from their foreign plants would tend to alienate domestic livestock interests whose good-will they have been somewhat conspicuously cultivating in recent years, and thus to create an atmosphere conducive to further investigation and regulation of the packing industry. Moreover, if the duty on beef prevented them from importing beef from their South American plants, it would at least furnish an additional guarantee — beyond any pressure they might exercise as members of the South American pool — of immunity in their home market from competition by other South American firms.

Is there not, however, still another possibility; namely, that free trade would enable the large packers to "flood" the domestic market with South American beef and suppress domestic competitors.

to the loss of both producers and consumers? Such a view derives some plausibility from the fact that imports *did* increase after the removal of the duty in 1913, though the South American pool was in existence at that time, and from the further fact that apportionment of space for the trade with the United States appears at least to have been discussed among the members of the pool.[40] But it is certainly an extreme view. The very limited demand for beef such as might be imported would render so drastic a result impossible of achievement. Furthermore, even if the position of the American packers were such that they could divert to themselves the benefits from free trade that were intended for American consumers, this would not argue against the abolition of the duty but rather for government action designed to prevent that abuse.

Without venturing further in the realm of speculation, this much, at least, may be said: that the conditions governing the South American trade are such as to raise a question regarding the unhampered flow of exports to the United States even under free trade. Unfortunately, it is one of those questions that only time can answer.

To summarize: there is no statistical device by which it is possible to measure, in terms of a particu-

[40] See above, p. 214. That there was ever any agreed division of space to the United States is, however, denied by at least one of the American packers. See Swift and Co., *Analysis and Criticism of the Report of the Federal Trade Commission on the Meat Packing Industry*, pp. 62–5.

lar figure, the competitive advantage of foreign beef in the American market. Analysis of changes in prices and imports following changes in the duty on beef tends to confirm the supposition that the duty has been one of several hindrances to importation; but it fails to show that domestic prices have been raised by reason of the duty. It is extremely doubtful, however, whether the amount of beef that has been kept out of our markets by the tariff would have been sufficient to lower domestic prices appreciably if it had been allowed to enter free of duty. There are a number of factors, not susceptible of statistical measurement, which would tend, even under free trade, to act as a severe check to imports: (1) the very limited market in the United States for frozen or semi-frozen, grass-fed beef such as would have to be imported; (2) the demand for kosher beef; (3) obstacles having to do with shipping facilities and trade connections; and (4) conceivably at least, the deliberate restriction of imports from South America by the American packers. These obstacles would probably not suffice in the long run to prevent a considerable increase of imports under free trade. But they do create a strong presumption that even during the few recent years in which it could have had any influence at all, the duty on beef has had no appreciable effect on domestic prices. Certain it is that the duties on cattle and beef have been a negligible factor in the evolution of the domestic cattle industry up to the present time.

PART III

THE EFFICACY AND EXPEDIENCY OF DUTIES ON CATTLE AND BEEF

CHAPTER IX

THE EFFICACY OF DUTIES ON CATTLE AND BEEF

Up to this point we have been concerned largely with the past and present effects of the duties on cattle and beef. It now remains to consider in Part III the future efficacy and the public expediency of these duties. In the present chapter we shall consider only their efficacy. To repeat the question as it was put in the Introduction (see p. 5), how far can duties on cattle and beef be made effective in increasing domestic prices and in stimulating the cattle industry? This involves two things. It involves, first, the elasticity of the demand for beef. How far is the endeavor to raise prices of beef likely to be hindered by the shifting of the demand to cheaper foods? It involves, second, the responsiveness of domestic output to increases in the price. How readily will production of cattle in the United States respond to increased prices?

I. THE ELASTICITY OF THE DEMAND FOR BEEF

Is beef a commodity the price of which can be increased without causing a marked falling off in the consumption of it? Or is it a commodity for which substitutes come rapidly into use when the price

goes up? It must be evident that this has an important bearing on any consideration of the tariff as it affects the cattle industry. For in so far as consumers undertake to escape the burden of higher prices by resorting to substitutes, the duties on cattle and beef will have the effect of diminishing the consumption rather than of increasing the price.

Observation and experience suggest that beef is a commodity for which substitutes can readily be found; that, in the loose sense in which the term is generally employed, the demand is "elastic." It is a commonplace that as the price of meat advances, less of it is used, its place being taken by vegetables, sea-foods, bread, cereals, dairy products, what-not. When prices rise faster than incomes, or when they fall less rapidly than incomes, consumers of limited means must reduce their living expenses, and of this process the substitution of the cheaper for the more expensive varieties of food is likely to be an important part. Perhaps partly because the resort to cheaper foods in such circumstances is regarded as a commonplace, satisfactory statistics have never been compiled for the United States showing changes in the dietary of large groups of consumers following changes in their purchasing power. Statistics of this sort have been compiled, however, in other countries, and these show that when incomes rise less rapidly than prices of food there is a marked tendency to substitute the less for the more expensive classes of foods and the less for the more expensive varieties

within each class.[1] Since meat is a relatively expensive food and beef is a preferred, and relatively expensive, type of meat, it is but natural to suppose that consumption of beef by persons of limited means — and this, of course, includes the bulk of the consumers — falls off markedly when prices rise faster than incomes.

But unsystematic observation, though it is of some suggestive value, cannot be relied on to determine whether the demand for a commodity is elastic or not. The term has a definite quantitative meaning and it is this meaning which is significant here.

By elasticity of demand is meant the proportion by which a given percentage of change in the price alters the quantity that would be taken. If a change of 1 per

[1] The countries referred to are Sweden and Norway. In 1914 the Swedish government made a detailed inquiry into the cost of living of 601 families of moderate or low earnings, distributed among 20 cities; and in 1916 — living costs having meanwhile increased much more rapidly than incomes — it repeated the inquiry among the same families. Detailed household accounts were obtained for May of each year. The results showed that there was a decreased consumption of meat, milk, butter, cheese, and eggs, and an increased consumption of fish, oleo-margarine, bread, flour, cereals, peas, beans, potatoes, and sugar. Consumption of meat declined by 11 per cent per individual adult, and there was a distinct tendency to substitute the cheaper for the more expensive varieties — this latter tendency being true also for other classes of food. For further details, see U. S. Bureau of Labor Statistics, *Monthly Review*, May, 1918, pp. 109–12: original source, *Livsmedelsforbrukningen inom mindre bemedlade hushall aren 1914 och 1918 av. K. Socialstyrelsen*, Stockholm, 1917. Inquiries by the Norwegian Government, based on the years 1913 and 1916, showed similar results. *Dyrtidens virkninger paa levevilkaarene, Norges Official Statistics*, VI, 105, 1917, pp. 77–80.

cent in the price alters the quantity taken by more than 1 per cent, the demand is *elastic;* if it alters the quantity taken by less than 1 per cent, the demand is *inelastic.* Thus it is possible, by comparing the percentage of change in the price with percentage of change in the amount taken, to measure the *degree, or coefficient, of elasticity.* If a change of 1 per cent in the price alters the quantity taken by exactly 1 per cent, the coefficient of elasticity is 1; if it alters the quantity taken by, say, 2.5 per cent, the coefficient is 2.5; and if it alters the quantity taken by only ½ per cent, the coefficient is 0.5. In the first case the demand is just on the line between elasticity and inelasticity; in the second it is decidedly elastic; and in the third it is decidedly inelastic.

Recent statistical inquiries indicate that in the United States the demand for beef is distinctly elastic. Two inquiries have been made, and though the findings differ considerably in degree, both indicate that demand is highly elastic. One of them, as published, shows the coefficient of elasticity to be in the neighborhood of 4.5; but subsequent investigations by the author of the inquiry have led to a correction in the method which, when applied, reduces the coefficient to about 3.5.[2] The other inquiry, based on more refined data, and somewhat more comprehensive as regards the factors taken into account,

[2] Schultz, Henry, "The Statistical Measurement of the Elasticity of the Demand for Beef," *Journal of Farm Economics,* July, 1924. The findings are based on monthly supply and price data for the period 1907–12.

shows the elasticity to be in the neighborhood of 2.0.[3]

These findings are to be regarded only as approximations to the truth. At best there are imperfections in the data. Furthermore, the device for measuring elasticity has certain limitations. It can apply only within the range of the observed data; and even within this range the elasticity is likely to be a variable, and not a constant, figure. The findings given above represent the elasticity only at the point of average consumption during the period under observation. Moreover, it is to be emphasized that any coefficient, whatever it may be, can be applied only to small percentage changes in quantity and price. To say that the elasticity of the demand for a commodity is 1.0 means that an increase of 1 per cent in the supply will cause a decline of around 1 per cent in the price; but it obviously cannot mean that an increase of 200 per cent in the supply will cause a decline of *200 per cent* in the price. The concept is one that can be applied to small increments, but not to violent changes.[4] Nevertheless the results of these inquiries leave little room for

[3] Ezekiel, Mordecai, "Correlations with Beef Prices, 1908 to 1914," unpublished manuscript, filed in the Library of the Bureau of Agricultural Economics, U. S. Department of Agriculture. The findings are based on monthly data for the period from April, 1908, to December, 1914.

[4] For a more detailed discussion of the concept of elasticity of demand, especially as it applies to this point, see Schultz, Henry, "The Statistical Law of Demand as Illustrated by the Demand for Sugar," *The Journal of Political Economy*, October, 1925, Vol. XXXIII, pp. 482–90.

doubt that beef is a commodity the price of which, owing to the marked tendency of consumers to resort to substitute foods, does not respond readily to changes in the market supply; in short, that the demand is highly elastic.[5]

This marked tendency to resort to substitutes when prices rise obviously imposes a severe check upon the possible effectiveness of cattle and beef duties as a stimulant to domestic prices. Nevertheless it will be possible sooner or later by means of the tariff to raise prices in some degree, perhaps very considerably, and this will tend to increase production — or at least to check its decline. But will production be stimulated much or little as a result of increased prices? This compels us to consider the relation of costs to output in the cattle industry; that is, whether, and if so how far, costs tend to rise when production is increased.

[5] What has been said refers, of course, only to the interrelation of prices and consumption. Other factors also affect the demand: changes in the habits and living standards of consumers — wrought by modern social and economic conditions — that have tended to diminish expenditures for food, particularly meat; and contributing to this latter, the wide and persistent advertisement of food products alleged to be superior substitutes for meat. But these are simply additional factors affecting the demand; they do not affect the validity of the price analysis. For a discussion of the effects of certain modern living conditions — small apartments, small families, employment of married women, "movies," automobiles, expensive dress, and so on, — upon food budgets and meat consumption, see U. S. Department of Agriculture, Bureau of Agricultural Economics, *Influence of Methods and Costs of Retailing and Consumers' Habits upon the Market for Meat*, Second Preliminary Report (multigraphed bulletin), June, 1925, pp. 21–4.

II. COSTS AND OUTPUT

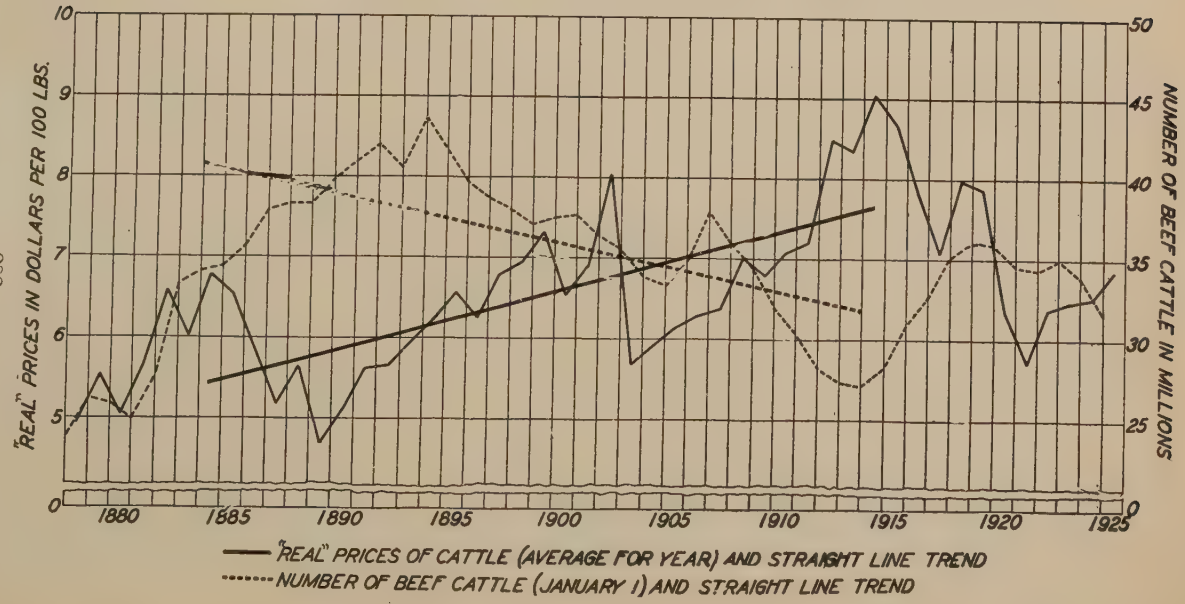
Before entering upon this phase of the discussion there is one distinction that should be made clear. We are not concerned with the extent to which supplies of cattle available at any given time will be thrown upon the market, or withheld from it, in consequence of a rise or fall in cattle prices. This should properly be called elasticity of *supply*. What is to be considered here is the effect of increased prices upon the productive capacity of the industry — the extent to which they will lead to its expansion, or perhaps check its contraction. This, obviously, is quite another matter. It has to do with elasticity of *output*, not of supply.

On this point, as in all forecasting, one naturally turns to the information afforded by past experience. In the very nature of the case it is impossible out of this experience to adduce evidence, whether general or statistical, that will show beyond all shadow of doubt what the future trend of costs will be. But the evidence does suffice to indicate what on the whole seems to be the more likely trend for the future.

The discussion may be begun by directing attention to the accompanying chart (see p. 232). This shows the course of "real" prices of cattle and of the beef cattle population of the United States since 1878.[6] The two series of data, it will be observed,

[6] "Real" prices of cattle have been derived by dividing money prices of native beef steers, 1,200–1,500 pounds, Chicago, by the Wholesale Price Index of the U. S. Bureau of Labor Statistics as

BEEF CATTLE POPULATION AND "REAL" PRICES OF CATTLE, UNITED STATES, 1878–1925



have been arbitrarily scaled and juxtaposed in the diagram in such a manner as to bring out the contrast in their trends. The reason for this, together with other significant features of the chart, will be brought out as we proceed.

Glancing first at the curve for real prices, it will be seen that these have fluctuated widely throughout the 48-year period covered by the chart; indeed that there have been three distinct cycles. But it will also be observed that each cycle was higher than the preceding one, so that the period taken as a whole and without reference to short-time swings has been one of rising real prices. Whether this was true of the earlier years of the chart could be told only if it were possible to extend the data farther into the past; and by the same token it is impossible without knowing the future to tell whether the long-time trend may have changed its course in recent years. These are, in peculiar degree, the limitations of any such chart dealing with long-time trends. But throughout the greater part of the period, certainly, the dominant trend of real prices has been distinctly upward.

Now what does this mean? Literally, of course, it simply means that money prices of cattle have either risen more rapidly, or declined less rapidly, than prices of other commodities; and the actual

published in the *Monthly Labor Review*, July, 1925, pp. 46–7. For the actual data used, see Appendix B, Table V. See also what was said in Chapter II, p. 31, regarding typical prices of cattle. For beef cattle population, see the table on p. 54.

data show that it was the former. But over a long period of years we may regard the trend of prices in a competitive industry as roughly indicative of the trend of marginal costs.[7] Such an assumption would not be warranted for short-time movements of prices, which are affected by many factors other than costs. But assuming that output remains constant or increases less rapidly than do prices, it should hold true for the long-time sweep of prices. Hence we may conclude that throughout most of the period covered by the diagram — whatever may have been true of the earlier and later years — costs were tending on the whole to rise. This was true not only of money costs, in which respect the industry would probably not differ from many others, but also when allowance is made for the changing value of money.[8]

But this does not tell the whole story. The trend of costs is only partially revealed by the "real" price curve. It is equally important to observe whether production of beef was increasing or diminishing during the period. The best available indication of this, though by no means a perfect one, is the cattle population curve shown in the diagram.[9]

[7] That is, the cost which will barely permit producers to avert a loss.

[8] That the same thing did not occur in all other branches of agriculture is indicated by the fact that in the sugar industry the trend of real prices has been downward rather than upward. See Wright, Philip G., *Sugar in Relation to the Tariff*, pp. 158–9.

[9] It is not a perfect indication, since it does not include dairy animals and does not allow for improvements in management and technique that have tended to increase the beef productivity of

It will be observed that the beef cattle industry attained its maximum size in the early nineties and from that time until the outbreak of the World War was rapidly declining. Thus, throughout most of the 48-year period — certainly from the early nineties up to the beginning of the war — production was declining quite at the same time that costs were rising.

Bearing in mind what was said in an earlier connection [10] regarding the fundamental conditions affecting the evolution of the domestic cattle industry — the exhaustion of free land and the competition of other agricultural enterprise — what seems to have occurred is as follows:

Prior to 1890 the cattle industry had been rapidly expanding. It was the era of the great range boom. After a period of depression following the panic of 1873, the industry had rapidly revived. On the demand side the industry was stimulated, (1) by the rapid expansion of the home market due to the increase of population, to the general industrial revival, and to the recuperation of the South; and (2) by the development of artificial refrigeration,

our cattle herds. On the whole, it must tend somewhat to exaggerate the decline in production since 1890. Even when dairy animals are included, however, population shows a tendency to decline (see chart, p. 55); and since they are an increasing portion of the total, their inclusion would undoubtedly tend to minimize the decline in beef production. More significant still is the fact that the available data relative to actual beef production indicate that since 1907 the fundamental trend — barring the war-period — has been distinctly downward. See pp. 41–9.

[10] See pp. 49–59.

which, besides further expanding the home market, greatly stimulated the European consumption of American beef. On the supply side the growth of the industry in response to this increasing demand for its products was facilitated by the enormous grazing resources of the sparsely settled West and by the construction of railroads rendering these resources accessible to the rest of the country.[11] After a few years of high prices, the industry suffered a severe setback in the latter eighties — a setback usually attributed to the combined effect of overstocking and of the depression following the financial crisis of 1884. Real prices, therefore, declined. The 12-year period up to 1890 is too short and unstable to warrant any conclusion, based on the chart, as to the trend of real prices; but in view of the abundance of free grazing land then available, and the rapid expansion of the herds, it is probable that the period was one of diminishing costs.

By 1890 or thereabouts the frontier had practically disappeared, and this ushered in a new era in the cattle industry during which — if we may judge from real prices over a quarter century, including cycles in which prices fluctuated widely — costs tended to rise. The straight line which has been fitted to show this trend indicates a rise between 1884 and 1914 of about 40 per cent in real prices.[12] But a

[11] For a discussion of these various forces, see Clemen, *The American Livestock and Meat Industry*, Chapter VIII.

[12] In fitting this line to the data we have gone back beyond 1890 to a year in which the price stood at a point on the cycle corresponding

more striking characteristic of the era was the marked falling off in the size of the industry. Between 1894 — the peak point — and 1914, the number of beef animals in the country declined by 38 per cent; while a straight line trend based on the same period as that for real prices, namely 1884–1914, shows a decline of about 22 per cent. This is partly offset by increased beef productivity of the herds; but there can be little doubt that the actual beef output of the domestic industry declined in these years.

Thus, taking the period from about 1890 to the outbreak of the war, it is clear that, quite apart from the rise in real costs, there was a marked rise in what are frequently referred to as *opportunity costs*. Land formerly devoted to grazing became more valuable for farming. In these circumstances only a very decided rise in prices of cattle relative to those of other products competing for the use of the land could have maintained the industry at its former size. But no such rise could occur. Neither the state of the world market after the advent at the beginning of the century of large supplies from South America, nor the elastic demand for beef, would permit it. Hence, at the same time that real prices of cattle were rising, the industry itself was declining. Or, to put it another way, at the

to its position on the cycle in 1914, so as to avoid the bias that would arise from beginning and ending with different phases of the cycle. This happened to bring the starting point to 1884. To have commenced with 1890 would obviously have exaggerated the upward trend.

same time that production was declining, real costs were increasing. What is thus seemingly a paradoxical situation can be understood only in the light of the greater profits to be obtained from uses of the soil other than cattle production; that is, the increasing cost of production of cattle in terms of opportunity for more profitable use of the land. Increased prices did not suffice to enable the cattle industry to hold its own in the agricultural economy of the country. Costs and prices rose; production fell off. In short, this was an era of markedly rising costs.

But are costs still tending to rise? Or have there been in recent years changes in the industry of such a nature as to lead us to suppose that the earlier tendency has ceased to prevail and that the industry has now passed into a stage where output can be increased without any rise in costs, perhaps even at diminishing costs? One cannot, of course, answer categorically. In some degree, certainly, the period from the passing of the frontier up to, shall we say, the outbreak of the war, is unreliable as a basis for forecasting. It was a period of marked changes in the industry, a period of transition from dominantly pastoral conditions to a more intensive type of production as part of a more permanent system of agriculture. Naturally, therefore, there has been in recent years increasing emphasis on improvements in management and technique; and as we have elsewhere shown (see pp. 66–7) notable progress has been made in this direction.

Have these forces making for lower costs now become dominant? If they have, then indeed the changes that have taken place in recent years must have been little short of revolutionary; for the chart indicates that until a decade or so ago, at any rate, the tendency to increasing costs not only existed but was very marked. On the whole, it seems much more likely that these low-cost forces are serving to check, not halt, the rise of costs and that this will continue to be the case. Especially does this seem likely if we assume, as we properly must, a domestic output increasing rapidly enough to maintain approximately the present per capita consumption of beef during the next 5, 10, or 20 years. Based on the recent rate of growth, the population of the United States should increase by some 15,000,000 during the next 10 years. In recent years the annual per capita consumption of beef has averaged around 60 pounds. On this basis some 900,000,000 pounds of beef would be required to take care of the addition to our population during the next decade. Undoubtedly a country so vast and rich in resources as the United States can supply this additional amount — and much more. But it is altogether unlikely that any such increase in output will be forthcoming without some considerable increase in costs of production.[13]

[13] Mr. E. G. Nourse of the Institute staff feels that the situation admits of a rather more optimistic interpretation. He says: "It is but natural that there should have been a marked increase in production costs and an accompanying decline in numbers of beef cattle in the decades during which our country passed from a

To conclude: It would appear that the cattle industry is one in which the tariff cannot be made a very effective instrument for increasing prices and stimulating output. The significance of this situation is not to be escaped. The marked inclination of consumers to resort to substitutes imposes a very distinct check upon the gain that can accrue to producers from duties on cattle and beef; and by the same token it diminishes the money burden

condition of pioneer exploitation to one of settled agricultural production. But that the upward trend of costs characteristic of that period is still operative or will be resumed as soon as post-war adjustments have been completed does not seem to me by any means certain. Such an interpretation seems to lean too strongly toward the rather prevalent idea that agriculture, being an industry dependent upon the use of natural resources, is characteristically and habitually operating under conditions tending to diminishing returns. Mr. Edminster does not make this specifically as a general argument, but on the other hand calls attention to the fact that costs of producing sugar appear to have been declining. However, his final conclusion as to increasing costs in cattle raising seems to me to lay too little weight on the significance of changes of technique in offsetting or postponing the operation of the tendency toward diminishing returns in the present instance.

"As a matter of fact, we have not as yet had an opportunity to test, under anything like normal conditions, the effectiveness of the enormous improvements in the technical processes and economic organization of cattle production which have been slowly gathering force for some years past. My own examination of these tendencies, however, leads me to think it quite possible that the reconstituted cattle industry dominated by farm rather than range conditions of production is likely to prove able to produce substantially the present per capita supply of beef for such a population as the United States shall in fact develop during the next decade or so without any substantial increase in costs above the level reached in the period just before the outbreak of the World War.

"I am disposed to view the period of rising costs shown in Mr.

that will be visited upon consumers. In so far as prices can be increased the duties will be a source of gain to many producers; but for such gains as may ultimately accrue to producers the country seems likely to obtain relatively small compensation in the way of increased output.

Edminster's chart as the passing of a period of abnormally cheap production, during which we were appropriating the free gifts of nature on the great western prairies and ranges, and to believe that once the industry is organized upon the basis of permanent production it will be possible to flatten out this slope to a plateau of constant costs, owing to the widespread application of scientific methods in an industry whose economic organization is gradually improving. The 'inability of the cattle industry to compete with other agricultural pursuits on tillable land' advanced as an 'opportunity cost' argument is somewhat misleading. The cattle carrying capacity at a given level of cost in a particular region does not necessarily decline when diversified agriculture is introduced. It is quite possible for land values to advance through the capitalization of the net returns from the more intensive lines of production being introduced, while at the same time cattle continue to be produced as a joint product at constant or, conceivably, declining costs.

"Obviously, any conclusion on this point depends as much upon the probable rate of growth of our population as it does upon the efficiency of beef production. The reader must judge for himself whether an average rate of increase of a million and a half per year is the most probable figure."

CHAPTER X

PUBLIC POLICY

It has been shown: (1) that the duties on cattle and beef have had but slight effect in the past, and (2) that although they should now begin to have some effect, the extent to which they can ultimately be made to increase prices and stimulate output is greatly limited both by the elastic demand for beef and by the tendency for costs to increase in the domestic cattle industry. Nevertheless it will be possible, sooner or later, to raise prices in substantial measure by means of the tariff; to increase the profits of many in the industry; and if not to increase output, certainly to check its decline. Should the duties, then, be continued in effect?

This brings up the question of how the duties affect the interests of the nation taken as a whole. On what premises are we to proceed in answering it? How shall we determine what is the wisest public policy in regard to these duties? Unfortunately, there is no single criterion by which this can be done. There are many considerations to be weighed besides the effect of the duties on the protected industry, and men disagree as to the relative weight to be given them. It is because of disagreement as to the importance to be attached to the various effects of protective duties that conclusions to which

everyone would subscribe can rarely be reached in regard to the tariff. Even when men are agreed on what the effects actually are, there is generally wide, yet honest, difference of opinion as to the course of action which will best serve the public interest. In connection with this whole matter the reader is referred to the more amplified statement in the Director's Preface.

Recognizing that there are these differences in point of view, it is necessary to compare the nature and degree of the various effects expected from the duties, since it is these effects which form the bases of the differing opinions. It should be constantly borne in mind that however desirable any particular effect may be, it must still be considered in what measure the tariff is capable of securing it.

Let us first look at the effects which are essentially economic in their nature. What will the country ultimately gain in an economic way, and what will it lose, from the continued maintenance of duties on cattle and beef?

A general argument commonly advanced in opposition to all protective tariffs is the traditional free trade argument that when the duties become effective they will draw resources into a use that is less productive than others to which they might be applied and thus reduce the national output of wealth. In doing so the duties will impose a loss on the nation in order that gain may accrue to the industry protected. By raising the price of cattle and beef above that for which they could be obtained from foreign

countries, so the free trader would say, protection diverts land and capital into a kind of production where the use of them is less effective than it would be if they were applied to producing something else. If Argentina, a comparatively new country, can produce beef more cheaply than we, why deny to ourselves this cheaper supply and thus force into the cattle industry capital and land that could be more effectively employed for other things? To do so, it is argued, is to waste human energy and wealth and to produce fewer goods.

This argument, however, needs qualification as applied to actual conditions. It assumes that there is free trade in other industries, for otherwise there could be no assurance that the land, labor, and capital made available for other uses through the removal of duties designed to protect a particular industry would in fact be more effectively employed. But the country as a whole is not on a free trade basis. Hence the mere fact of a shift of land, labor, and capital from, let us say, the cattle industry would not be conclusive evidence that the shift was from a less to a more effective economic use.

Let us suppose, however, that the retention of the duties on cattle and beef *would* divert land, labor, and capital from a more to a less effective use. If this were the case, those who regard the amount of the national output of goods as the sole test of public policy would have no occasion to read further. There would, indeed, be no reason for concerning one's self with specific inquiries such as this study

undertakes. Even those who are willing to qualify the theory where the industry in question is an "infant" industry, and those also who concede that the economic loss through devaluation of investments by a sudden removal of existing protective duties argues for caution in reverting to free trade, would have no occasion to pursue the analysis further if these were the only exceptions which they recognized. For clearly we are not dealing here with an infant industry. Nor are we dealing with one into which more than a negligible amount of capital and labor has hitherto been drawn, or is now retained, by reason of higher returns rendered possible through the tariff. On the contrary, it has been shown that the duties now in effect have had little influence upon domestic cattle prices, and through prices upon investment in the industry.

But is it not conceivable that by encouraging and stimulating the cattle industry other objects might be attained that would more than make up to the nation for some slight reduction in the output of goods? Might not the national loss from this source and from other sources to be indicated below find full compensation in gains to the nation from the beneficent effects which would be visited upon the cattle industry? To answer these questions it is necessary to specify what the gains are that may be expected.

In so far as domestic cattle prices are raised by the tariff many producers will be directly benefited. This will certainly be true of those in the breeding sections

of the country, primarily the range states; whether it will be true of those engaged in fattening cattle for the market is another matter, to be discussed below (see p. 252). Whatever may be the effect on the economic well-being of the rest of the country, those in the breeding sections will be enabled, to the extent that prices are actually raised, to profit by the increasing pressure of population upon our resources for beef production.[1]

Even for the breeders, however, the nature of the demand for beef would be a factor tending to limit profits. This is because of the rapidly diminishing consumption which follows a rise of price. If, in spite of the elastic demand, it were eventually possible to raise the price of beef on the average by one cent a pound, the aggregate gain to the entire industry — to all producers of cattle of whatever sort — would amount, on the basis of the present annual output, to some $60,000,000 a year.[2] How

[1] The situation in this respect is similar in kind, though less immediately applicable in degree, to that of which Adam Smith was writing a century and a half ago when, speaking of the importation of lean cattle from Ireland into the United Kingdom, he pointed out that the "freest importation of foreign cattle could have no other effect than to hinder those breeding countries [the mountains of Scotland, Wales, and Northumberland] from taking advantage of the increasing population and improvement of the rest of the kingdom, from raising their price to an exorbitant height, and from laying a real tax on the more improved and cultivated parts of the country." Smith, Adam, *Wealth of Nations*, Book IV, Ch. 2.

[2] Based on an output of 6,000,000,000 pounds. Actually, the figure has ranged between 6 and 7 billions, but this includes a very considerable farm slaughter.

long it would be before such a gain could be realized cannot be foretold.

But the indications are that it would not be soon. Imports of beef in all forms now comprise some 1 or 2 per cent of the domestic consumption. Assuming that a reduction of 2 per cent in the supply normally causes an increase of but 1 per cent in the domestic price — to use the more conservative of the two findings for elasticity of demand discussed in the preceding chapter — it follows that complete prohibition of imports would for the present raise domestic prices by only one-half to 1 per cent. This, under present price conditions, would amount to from 2½ to 10 cents a hundred pounds, live weight, for the bulk of the animals marketed. By the same token if, following removal of the duties, 500,000,000 pounds of beef, live or dressed, came into the United States, this would reduce cattle prices by some 20 to 40 cents a hundred. And if the duties ultimately had the effect of keeping out a billion pounds — an amount nearly as great as Argentina's entire average annual exports during the past decade — their removal would reduce prices by from 40 to 80 cents a hundred. This last supposition, however, involves such a vast change in supply that for reasons explained above[3] it is subject to a wide margin of error.

These figures do not, of course, mean that those engaged in the breeding end of the cattle business could not eventually profit very considerably from

[3] See what was said on p. 229 regarding certain limitations in the application of the elasticity findings.

restriction of cattle and beef imports. In spite of the elastic demand for beef their gains might in time become substantial. If the conclusion arrived at in the preceding chapter be correct; namely, that the domestic output may be expected to respond but slowly to increased prices, this is itself a condition tending to enhance the opportunity of those engaged in the business to profit from tariff duties. The indications are, however, that substantial direct benefits from the tariff would occur at an unknown but probably remote time in the future.[4]

In connection with these uncertain future gains to breeders should be mentioned whatever gains would accrue to producers of the substitutes for beef to which demand would be shifted as the price of beef rises. Owing to the great variety of substitutes[5] and to the varying conditions governing their prices, such gains cannot be estimated. It should be noted, however, that prices of some of the more important such as pork, of which we produce a large surplus, could not be in any way affected, since prices are determined in the world market.

The only other direct economic gain is the public revenue that would be derived from duties on cattle and

[4] In connection with this point see also what was said on pp. 201–20 regarding conditions which tend to limit imports.

[5] It is not to be assumed that pork and other meat alone replace beef. The very fact that the decline in per capita consumption of beef in the United States has been accompanied by little or no increase in the per capita consumption of other meats reveals the contrary. The indications are, indeed, that the non-meat substitutes are in the aggregate quite as important as the meat substitutes.

beef. Whatever may be thought of a tariff as a method of raising revenue, consideration must be given to duties on cattle and beef on this ground so long as customs duties are a part of the national tax system. But revenue from this source will be peculiarly small and costly. The yield from cattle and beef imports is now less than $2,000,000 annually and is bound to remain small for a long time to come. In order to obtain a very small amount of revenue consumers would be compelled to pay higher prices not only for imports but also for the entire domestic output, and this comprises the bulk of the total consumption.[6]

Such are the direct economic advantages which may be expected from protective duties on cattle and beef. They are not great and at best they are somewhat uncertain. Against them may be set the economic disadvantages that are likely to arise.

Most obvious among the objections to the duties is the burden that will sooner or later be imposed on consumers. How great will this be? In answering this question it is important to keep clearly in mind the distinction between immediate and ultimate effects. It has been shown that the duties have had very little effect upon domestic prices up to the

[6] It is true that purely from the standpoint of revenue the elasticity of demand for beef lessens the objections to a duty, since the financial burden arising from higher prices for that part of the supply produced at home is by so much reduced. But where the overwhelming part of our supply is produced at home and is likely to be so produced in the near future, as in the present instance, the aggregate burden must at all events far outweigh the small revenue gain.

present time; and it is probable that they will not have any very considerable effect for some years to come. Hence, so far as immediate effects are concerned, it is doubtful whether consumers will be much burdened, or producers much benefited, by the duties.

But we have now reached the point where the duties, though their effect remain small for some years, should become increasingly potent; and we are therefore compelled to look to their ultimate, as well as their immediate, effects. Unfortunately, these are even less susceptible of statistical measurement than are the gains above enumerated. But it is clear that two kinds of burden will be involved. In the first place, in so far as prices are raised by the tariff those who continue to buy beef will be financially worse off. If the average price were eventually increased by so much as a cent a pound, the same gain of $60,000,000 to producers cited above would become a loss to consumers [7] and, in addition, any further charge that might arise from pyramiding of the duties in the transition of beef from the cattle-raiser to the consumer. Whatever the financial burden to consumers may prove to be, it is certain to be at least as great as the gain to cattle producers.

But under conditions of elastic demand a considerable part of the onus on consumers would take the form of giving up this kind of meat rather than of a greater financial outlay. Would this sacrifice be a serious burden? Its importance hinges upon

[7] Allowing for the small gain from revenue.

two factors: first, the weight attached to loss of satisfaction by reason of compulsory substitution of less desired foods for beef; and second, the need of meat [8] in the human diet.

The importance to be attached to these factors is a matter upon which opinions are likely to differ. For some years, certainly, neither the financial nor the sacrifice burden (nor, for that matter, the benefit to producers) is likely to be very great; and some will be disposed to hold that even on ultimate grounds the burden which arises from deprivation should not be accounted a very important factor in the determination of public policy with respect to the duties on cattle and beef. Nevertheless, though the burden of the duties will be lessened precisely because substitution is possible, it will not be wholly escaped; and to the extent that it assumes this form it will not be compensated by any gain whatever to producers of cattle. It will be a burden without mitigation so far as they are concerned. However much opinions may differ as to its importance, this may at least be said: that, together with the financial burden that will fall to those who continue to buy beef, it raises a presumption against artificial restriction of our beef supply such as only the attainment in large measure of the ends sought in imposing the duties could possibly counterbalance.

[8] We are dealing in this study with beef rather than with meat as a whole. But in as much as the non-meat substitutes for beef appear to be as important as the meat substitutes, the use of substitutes in place of beef involves a smaller consumption of meat. See p. 248, footnote 5.

A second objection on economic grounds, applicable only to the duties on cattle, is the burden they impose on that branch of the industry engaged in fattening cattle for the market. In Chapter VI it was shown that the duties on cattle do not as yet have much effect on domestic prices, but that they may be expected to have a gradually increasing effect upon prices of lean animals as time passes. In so far as they do so they will be a tax on the raw material of the cattle-feeding industry. Only in small part can this disadvantage be offset by compensatory duties on the finished product. Neither Canada nor Mexico can successfully compete with us in cattle-feeding; hence a duty on fat cattle is of little consequence. A duty on dressed beef would tend to compensate for the duty on lean animals, but the elastic demand for beef imposes a distinct limitation here. Whatever the duties imposed on fat cattle and beef, that imposed on lean cattle cannot but become a handicap to our cattle-feeders. Even those who contend that the supply of animals that will be forthcoming from adjacent countries is of small importance to our cattle-feeders compared with the increase in the domestic output that would be readily possible through improvements in management and technique, will scarcely urge this as a reason for maintaining the cattle duties now in effect. On the contrary, it would appear to be a better argument for their removal on the ground that they are not needed.[9]

[9] There is an additional disadvantage involved in the acceptance by cattle-growers of protection for their industry. But though its

Finally, a duty on live cattle will burden the meat-packing industry. The packer, like the cattle-feeder, is in an intermediate position in which profits depend not upon the actual level of cattle and beef prices but

effect is economic its mode of operation is political. To secure duties on their products the cattle-growers must commit themselves to a general policy of protection and in doing so must agree that prices should be raised on what they buy. This is likely to result in a loss greater than their prospective gain. It is true that a considerable number of the things they buy are on the free list of the existing law. But many things are dutiable which are necessary to maintain the established standard of rural living and still more which would be necessary under the higher standard that is a prominent feature of the agricultural program. Nearly all of the goods which they buy for consumption — food, clothing, and household furnishings — are dutiable. A surprisingly large proportion even of the producer's goods which they buy is also dutiable. It is true that some among the more conspicuous, such as agricultural implements, barbed wire, fertilizers, cement, brick, lumber, and binder twine, are on the free list. But among the dutiable goods are: paint, glass, nails, screws, pliers, knives, saws, files, horseshoes, spades, shovels, scythes, galvanized wire fencing, saddlery, grindstones, limestone, lime, rope and cordage, baling wire, and small tools of almost every sort (including those already named). These articles are likely to be needed, if not by the ranch operators, certainly by those in the industry who are also engaged in farming operations. Upon the prices of some of them the tariff has little effect; upon others, however, it is quite effective. The higher prices at which purchases must be made under a protective tariff makes a substantial addition to the cattle growers' expenditures. What they gain by protection has hitherto been negligible and bids fair to remain small for some time to come. It scarcely appears to be "good business," therefore, or — to express it more technically — a sound economic transaction, for cattle growers to debar themselves from protesting against the artificial stimulation of manufacturers' prices by seeking for themselves so meager a share of the benefit protection is intended to confer. They are in a peculiarly weak position for bargaining purposes.

upon the margin between the two.[10] If he could always pass on to the consumer whatever increase of price arises from the duty on cattle without thereby diminishing his sales, he would have no cause for complaint. But this he cannot freely do. He cannot compel consumers to take beef in the same quantity at higher prices.[11] If he attempts to pass the burden back to the producer, receipts of fat animals will fall off; if he attempts to pass it on to the consumer, the demand for beef will decline. In either case his volume of business will be reduced, and the amount of his profits depends upon volume as well as upon price.[12]

[10] Assuming, of course, that profits from by-products remain constant.

[11] In part the reduction in sales of beef may be offset by increased sales of other meat; but because of extensive substitution also of other foods, the total annual sale of meat per capita of population will be less than would be the case if the packers could operate on a lower price level. The decline in the per capita consumption of meat has, indeed, been a source of much concern to both producer and packer. Between 1908 and 1917 consumption per capita declined from 170.9 to 130.9 pounds in the United States, and although it has since tended to increase, this is clearly attributable in large measure to low post-war prices in consequence of liquidation of our meat herds and, in certain years, to heavy corn crops. It is true that in their endeavor to check this tendency, sponsors of the familiar "eat-more-meat" campaign have attributed it largely to anti-meat propaganda. But the very fact that the demand for beef is elastic indicates that prices must be an important factor.

[12] We do not mean to suggest here that profits of the packers are invariably greatest when prices of cattle and beef are lowest. Obviously, a general depression in trade and industry, by lessening the demand for meat, may well bring both low prices and slow turn-over. But it is none the less true that higher raw material costs will be a burden to the packer.

So much, then, for the *direct* economic gains and losses. It requires no delicate weighing of one against the other to reveal that the balance of the argument inclines heavily to the side of burden rather than gain.

There are in addition two indirect economic benefits which call for consideration here; namely, diversification of agriculture and conservation of the soil. The merit of diversification is twofold. It tends, in the first place, to give variety to the economic life of the nation and thus to impart a stimulus to the mental life and genius of the people which is not found in a community with a narrow range of occupations. In a country, however, where the economic life of the people is already so varied as in the United States, this purpose may be regarded as already fulfilled. In the second place, widening the range of products, provided the additions made are prudently selected, promotes greater stability in agriculture. Some regions undoubtedly suffer from dependence upon a single crop or too limited a range of products. This has been notoriously true of the Cotton Belt and the newer farming regions.

Yet it is easy to exaggerate the extent to which diversification is possible or practicable. There are often serious obstacles in the way of rapid change — sometimes climatic, as in the South, sometimes economic, sometimes psychological. A tariff, if it could be made to raise prices of cattle and other products of general farming more than it does the prices of things already produced in these regions,

would naturally tend to promote diversification. But any tariff would afford an incentive to diversification of small importance compared with such influences as the continued devastation of the cotton crop by the boll weevil or the gradual exhaustion of the soil in the new farming regions. It is not low prices of beef, primarily, that stand in the way of further diversification. Indeed, higher prices might even tend actually to prevent it in some parts of the West by checking the inroads of tillage into the range. On the whole, there does not appear to be much in the point as applied to the cattle industry.

The second of the two indirect benefits is of less doubtful character. Production of cattle, as of other livestock, tends to renew the soil. It is true that this incentive to produce livestock exists regardless of the tariff. Yet it is also true that a tariff on cattle and beef, in so far as it brings about an increase in the total amount of livestock carried on the land and not a mere substitution of cattle for some other kind of stock, will promote further conservation. It is questionable, however, whether the additional conservation thus secured is worth the price which must be paid for it; whether conservation cannot be more cheaply effected by other means.[13]

[13] Another benefit sometimes cited is the bringing into use of resources that are now partly or wholly wasted. This, however, is so patently unsound as an economic argument that it may be quickly dismissed. There are millions of acres of land, as we have elsewhere shown, that could be brought into use *at a cost.* But there is no economic gain derived from bringing resources into use when the

On the whole, the weight of the evidence appears to be distinctly on the side of the conclusion that duties on cattle and beef will be economically more burdensome than beneficial. Some particular groups, notably the cattle breeders of the West, will gain in a direct way; some additional revenue will be derived; and something may be gained in the way of diversification of agriculture and renewal of the soil. But on the other hand, no very considerable increase in the national output of beef is likely to follow; whereas the endeavor to stimulate the industry will involve a direct burden in the way of increased prices for those who continue to buy beef and a sacrifice burden for those who cannot do so. And upon both the cattle-feeders and the packers it will be a special handicap.

There are certain other objects of protection, in the main social or political rather than economic, which require consideration. If it were only economic motives that guided the commercial policies of nations, tariff-making would be a much less complex thing than it now is. But in fact we know that other considerations, social and political, play an

cost of using them can be met only by artificially raising the price of the products. It is true that, by artificially raising prices, production of beef as a part of general farming might be somewhat extended without diverting capital and labor from other enterprise. By providing a better market for roughage and by furnishing employment for farm labor and equipment during the winter season, at a time when it would otherwise be idle, increased beef production would afford additional opportunities for labor and capital already in the business. This, however, is merely a specific allocation of the gain already indicated on page 245.

important part. We cannot, therefore, rest the case at this point. Granting that duties on cattle and beef will be an economic burden to the country, are there not other ends of a desirable sort that will be promoted to an extent which justifies the aggregate economic sacrifice involved? Among such ends two are of peculiar prominence.

The first of these is the desire to stimulate agriculture in order to maintain a balanced economic and social life for the nation. It is urged that we ought to take positive steps to prevent a further decline in the relative position of agriculture in the national economy. In part this argument for protective duties rests on the supposition that a well-rounded economic regime enhances the security of the nation. With this phase of the matter we shall deal under the next head. In part, however, it rests on the supposition that country life is more wholesome than city life, that it provides better social material, a society that is inherently more sound and stable. Assuming this to be true — for there are many who do not admit it without qualification — will protection to the cattle industry contribute to the end desired? That is, will it increase the number and well-being of our rural population?

In so far as protection stimulated the cattle industry in parts of the country that are adapted only to pastoral use it would make for a greater rural population even though, because of the nature of the occupation, it could bring no large aggregate increase. Still, if this increase, small though it be, came about

through the withdrawal of capital and labor from urban enterprise it would aid somewhat in adjusting the balance between rural and city life. But if it came about merely through the transfer of capital and labor from other agricultural uses where they could be just as well employed, it would not affect the balance at all. The latter supposition more nearly accords with the facts disclosed by experience than does the former. Cattle-raising competes for the use of capital and labor with tillage rather than with urban industry. Higher cattle prices, therefore, would tend to draw men from these branches of agriculture and not from the cities. If protection to the cattle industry could be accompanied by effective protection to the other branches of agriculture, then indeed the balance of rural and urban population might be readjusted. But for most American farm products the price cannot be affected by the tariff. Accordingly a rise of cattle prices could be expected to lead to no other result than a slight shifting of occupations within the population that is already rural.

The second purpose, not economic, urged by the advocates of protection is the avoidance of dependence upon foreign sources of supply. This purpose has primarily a military significance. There is, to be sure, some feeling that as a matter of national pride we should endeavor to produce for ourselves everything that we use. But the force of the appeal rests upon the more plausible ground of national security. Is not beef a commodity so essential for military and

civil use that the failure of foreign supplies — whether the result of war or of any other disturbance to trade — might seriously cripple the nation?

For civilian use beef cannot be regarded as such a commodity, since substitutes which would suffice to tide over an emergency are readily available. For military consumption, however, if not indispensable, it is certainly highly desirable. The enormous quantities of frozen and preserved beef consumed by the military establishment during the World War bear witness to this.

Military need does not, however, argue for complete national self-sufficiency but only for an industry that can supply purely military requirements in an emergency. Such an industry we shall continue to have whether or not cattle and beef are placed on the free list. Moreover, production of beef can be fairly quickly expanded, though less quickly than that of other meats or of grain crops. It is noteworthy that our production of beef annually fluctuates by from 300,000,000 to 500,000,000 pounds, and that in one year during the war, 1918, it increased by 641,000,000 pounds. This increase is equivalent to about two-thirds of Argentina's entire average annual export during the past decade. Our experience during the war amply discloses that production can be enormously and rapidly increased in a national emergency.[14] Finally, it should be noted that the use of substitutes by civilians would easily augment the supply available to the armed forces,

[14] At greatly increased costs, of course.

as was done during the recent war. All told, possible military need furnishes little ground for artificial stimulation of the cattle industry.

But in speaking of things military it may be noted that a general objection to protection, namely, that it is provocative of international ill-will, finds special application in the present case. The increase in our duties on agricultural products since the war has been especially onerous to Canada, and owing to her peculiar dependence upon the United States market this has been notably true of the cattle duties. The duties which we have imposed upon her products have fostered resentment and in some quarters even threats of retaliation. In view of the importance of the Canadian market to American industries, anything in the nature of a tariff war would be a disaster only less serious than military hostilities.

The foregoing analysis of the results that may be expected from efforts to protect the cattle industry shows that duties on cattle and beef are not promotive of national welfare. And yet such duties are now in the law. This raises the question whether repeal after they have once been put into operation may not damage national interests even more than would their retention. The question is by no means confined to these particular duties. After industries have once become adjusted under the artificial stimulus of protection the question always arises whether removal of the stimulus may not bring on a collapse that will permeate the whole economic system. Accordingly if it were to be expected that

repeal of the cattle and beef duties would cause widespread and serious losses in the cattle industry, it might well be the part of wisdom to retain them now that we have them, even though to do so would be at some cost in money and deprivation to the public. For such an expectation, however, there appears to be no ground.

No serious damage to the cattle industry as it now exists would ensue from repeal of the duties. They were incorporated in the existing tariff with the hope that they would be of special aid to the industry in the crisis with which it was confronted in 1921–22. In the exigencies of the moment, friends of the industry ignored all question of the actual efficacy or expediency of the tariff as a means of relief. Investments in the cattle industry and in related enterprise were about to be wiped out, and those who needed relief demanded the application of every device that might even by the remotest chance bolster up prices and save the situation.

If the industry had actually received distinct benefits from the duties and had thereby been induced to go through a reorganization the success of which would depend on the retention of the duties, then justice and national expediency would require that the government should not proceed lightly to a reversal of policy. But it has been shown elsewhere that the duties have had a negligible influence on domestic prices,[15] and it is only through prices that they could have affected the industry. Not only

[15] See Chapters VI and VIII.

as an emergency restorative in 1921–25 but under normal conditions as well, they have been almost wholly ineffective. It follows that their repeal could not inflict serious damage upon those now in the industry.

Still, so long as there is a prospect that the industry will receive any benefit whatever from the duties, would it not be better to postpone their removal until the industry is in a more prosperous condition? Though the crisis in the industry is now past, prices of cattle, as of many other products of agriculture, are not yet on a parity with those of manufactured products. Is the present, therefore, not an inopportune time to remove the duties?

To retain the duties on this ground would only complicate matters in the long run and would promise little benefit to the industry in the immediate future. The only way in which the duties can help producers is by raising prices; that is, by putting the industry on a protected level. Whether this came about slowly or rapidly — and it is to be noted in this connection that such a policy might involve the more or less indefinite retention of the duties — such would be the tendency. Once it set in, the removal of the duties on ultimate grounds of public policy would have been rendered just so much more difficult.

Nor do duties offer any promise of preventing or minimizing the effects of future crises in the industry. On the contrary, there is good reason to

believe that they will render the industry less stable than it would be without them. For, once the industry is adjusted to such stimulus from protection as the cattle and beef duties may come to impart, it will be as much affected by depression outside the United States as it would be under free trade, and even more affected by depression within the country. The imposition of duties at the beginning of a depression, if imports have become substantial in amount, might tend to stabilize conditions, but the continuous application of duties in order to provide against a future contingency would tend to defeat itself.

SUMMARY AND CONCLUSIONS

The findings from our inquiries may be presented in the following enumeration:

1. The cattle industry of the United States has been of diminishing importance in the agricultural economy of the country during the past two or three decades. The number of cattle in the country reached its highest point in the nineties. Production of beef during this earlier period is unknown; but figures available since 1906 indicate, not only that it was failing to keep pace with the growth of our population prior to the war, but that it was actually declining. As a result, the exportable beef surplus of the country, previously large, so rapidly dwindled that at the time of the outbreak of the war imports of beef in all forms, live and dressed, exceeded exports. Production and exports revived during the

war, but this only obscured for a time the underlying trend from national beef-surplus to beef-deficit. Now again the country is at the point of balance between surplus and deficit.

2. The declining importance of cattle husbandry in the national agricultural economy has been, in the main, the result of the passing of the American frontier and the inability of the cattle industry to compete with other agricultural pursuits on tillable land. As a pastoral industry cattle-growing has been compelled to give way to more intensive use of the land as the country has become more thickly settled.

3. While it does not necessarily follow that production of beef in the United States will continue to decline, indeed that it may not actually increase, there is little reason to suppose that as the industry is now prosecuted production can be increased except at increasing costs. Physically, there are, of course, possibilities of much greater production; and doubtless there will be a gradual increase in the farm herds as mixed farming becomes more prevalent; so likewise, improvements in management and technique tending to keep down costs. But most of the possible means of expansion clearly presuppose increased prices; and such statistical evidence as can be brought to bear on the point indicates that as the industry has been conducted, production does in fact respond but slowly to increases in price.

4. Though duties have long been imposed on cattle and beef — barring a period of some seven and a

half years of free entry under the Act of 1913 — the evidence indicates that they have thus far had no appreciable effect on domestic prices and hence have been a negligible factor in the evolution of the industry. As the duties on cattle and beef present somewhat different aspects, however, they need to be separately distinguished in this connection. The duties on cattle tend to restrict imports from adjacent countries — with which alone trade is feasible owing to costs of transportation. But though these duties may in time affect very considerably the supply of lean animals available to that branch of domestic agriculture engaged in fattening cattle for the market, their effect on domestic supplies is not sufficient at this time to have more than a negligible influence on prices. As for fat animals, neither Canada nor Mexico can compete seriously with the United States.

The duty on beef — which affects primarily overseas, rather than nearby, sources of supply — has likewise presumably had some effect on imports; but it is extremely doubtful whether the amount of beef kept out of the country by reason of the duty has been great enough to affect domestic prices appreciably. The small demand in the United States for beef of the type that would have to be imported, not to mention certain other obstacles of lesser importance, would for the present be a severe check to imports even if no duty were in effect.

5. Even in the future such stimulus as the duties may gradually come to impart to prices and output

seems likely to be seriously checked by the elastic demand for beef and the tendency to increasing costs in this industry.

6. Analysis of the gains and burdens to the country as a whole that may be expected to result from the continuance of duties on cattle and beef indicates that these duties, though they do not now directly affect any domestic interest very appreciably, will eventually impose an economic burden on the country that will not be compensated by other effects which they may have upon the national welfare.

In short, to answer the three questions raised in the Introduction (see p. 5), careful weighing of the evidence indicates: First, that the domestic cattle industry in its present state is not dependent upon duties on cattle and is dependent upon a duty on beef, if at all, only in a very small measure; second, that duties on cattle and beef can in the future be made effective in increasing prices and stimulating production only under conditions that are peculiarly difficult; and finally, that the endeavor to protect this industry will eventually impose a burden upon the nation quite out of proportion to the gains that can accrue from such a course.[16]

[16] Mr. E. G. Nourse does not concur fully in the conclusions stated. He attaches more importance than does the writer to the efficacy of the duties during the period of acute emergency and believes that, now that the liquidation of herds is nearing completion, the duties are likely to facilitate the recovery of prices to approximately the pre-war parity; and he considers this a proper object of public policy. On the other hand, he is disposed to feel that the probability of burden is not so great as is argued in the text.

APPENDICES

APPENDIX A

COSTS OF PRODUCTION

By the Tariff Act of 1922 the rule is established that duties shall be so adjusted as to equalize the difference in costs of production in the United States and in the chief competing country. The application of such a rule as the exclusive basis for determining duties is open to objections on both theoretical and practical grounds. It is the practical difficulties which will chiefly concern us here; but it will be well first to direct attention to the limitations of the theory.[1]

In the first place, the tendency of the rule, literally applied, will be to afford protection to even the most inefficient domestic producers and therefore to foster inefficiency in a given industry. This will be the tendency even though in particular cases the magnitude of the duty may vary to some extent according to the method of determining the difference in cost, that is, whether low costs, some kind of average costs, or high costs be compared. Where costs are highly variable, moreover, the rule in reality begs the question, because any duty which is neither wholly prohibitive nor wholly ineffective will, in the long run, be just sufficient to offset the difference in marginal costs. That is to say, production tends ultimately to become adjusted to whatever duty may be in

[1] For a more complete discussion of these limitations, see Page, Thomas Walker, *Making the Tariff in the United States*, pp. 72–99; also Wright, Philip G., *Sugar in Relation to the Tariff*, pp. 106–49 and pp. 237–43.

effect. Thirdly, factors other than costs may mitigate or wholly remove the need of a duty equal to the difference in costs in order to sustain a particular industry, just as, less frequently, they may indicate the need of a duty higher than such difference. Finally, the rule entirely ignores broader considerations of public policy, as for example the interests of the consumer. Provided only that the duty is equal to the difference in cost of production, there is no limitation upon the increase of the price save that imposed by domestic competition or by the capacity and willingness of consumers to absorb the increase.

The application of the rule also involves certain practical difficulties, some of which, though they are not peculiar to this particular study, are of outstanding importance in connection with it. There are, of course, many costs of production of cattle here and abroad, just as there are many producers, and types of product. It is therefore impossible to obtain anything other than sample costs, and in the choice of these mere convenience has undoubtedly played an important part. It is true that the Department of Agriculture has made extensive cost studies in one branch of the domestic industry, namely cattle-fattening in the Corn Belt, and that despite the wide variation in these costs they constitute at least a generous sample. For the remainder of the domestic industry, however, the available costs are meager and, for the most part, out of date. As regards foreign costs the data are even less satisfactory. For Canada — the "chief competing country," if by this is meant the leading source of imports — no costs either of cattle or of beef are available. For Argentina — the chief potential source of competition — some data are available, but they are

meager and are in reality estimates rather than actual, ascertained costs.

Moreover, quite apart from the inadequacy of the data, there are cost-accounting difficulties which still further limit their value for tariff purposes. Especially is this true regarding the proper treatment of interest, rent, and costs of feed. Finally, there is the difficulty of applying the costs, assuming them to be satisfactory, which arises from differences in the quality of the beef. There is a distinct price preference for domestic beef. Assuming that the Tariff Commission is entitled under the law to take this into consideration in ascertaining the difference in costs, there still remains the practical difficulty of properly allowing for it. If there were only two grades of beef to be compared this would not be a serious difficulty; but in fact the grades are many and the selection of the proper grades for comparison, with proper allowance for difference in quality, would be difficult even if a complete set of costs and prices were available.

Notwithstanding the limitations of both a theoretical and a practical nature, something may be gained by presenting such information as is available regarding comparative costs here and in Argentina. Not only will it serve to illustrate the difficulties involved in applying the cost rule to the case in hand, but it will serve the more constructive purpose of showing in a general way the nature and extent of the handicaps suffered by the United States in producing beef as compared with Argentina.

I. COSTS OF PRODUCTION IN THE UNITED STATES

Sources and character of cost data. All of the available cost data on the domestic cattle industry are derived from studies made by the Department of Agriculture, partly in

co-operation with certain Corn Belt states.[2] The studies that have been made fall into three groups: (1) a study of the cost of producing yearling calves in the Middle West, 1914–16; (2) two studies of the cost of producing cattle on the range, one in Texas and Oklahoma in 1914–17, the other in the Far West in 1914; and (3) two series of studies of the cost of fattening cattle in the Corn Belt, one covering the period 1912–13 to 1916–17, the other — with a partially different selection of states — the period 1918–19 to 1921–22. Unfortunately, no study was made of the cost in the Corn Belt of raising cattle between the age of one year and the time when sold for fattening, a period of from 18 to 24 months, so that the combined cost of raising and fattening cattle in the Corn Belt during these years cannot be given.

All of these studies are based on the cost per head rather than per hundred pounds, and only in the case of costs of fattening in the Corn Belt are data available permitting conversion to the latter basis. With this latter exception, therefore, these costs are of little direct value for the purpose of international cost comparison. They do suffice, however, to illustrate the difficulties in applying the cost theory which grow out of the wide variance of costs amongst different regions and under different systems of management.

Cost of keeping cows and raising calves and yearlings in the Corn Belt. The following table shows the average

[2] Most of these data are published in the report of the Federal Trade Commission on *The Meat Packing Industry*, Part VI, 1919, and in Report No. 110, Office of Secretary, Department of Agriculture, 1916, and are summarized, together with later data, in a report of the U. S. Tariff Commission entitled *Cattle and Beef in the United States*, 1922. The more recent data are, however, derived from pamphlets issued by the Department of Agriculture.

cost of keeping cows and raising calves and yearlings in the states named, under five systems of management during the period 1914–16.

COST OF KEEPING COWS AND RAISING CALVES AND YEARLINGS IN IOWA, MISSOURI, NEBRASKA, AND KANSAS, 1914–16*
(Dollars per head)

Item	Cows of beef type (milk taken by calves)	Cows milked (calves fed on skim milk)	Combination of first and second method	Cows partly milked (calves take remainder)	Some cows milked: others nursetwo calves
Number of cows...	11,261	1,990	3,182	1,541	712
Cows per farm....	31.80	12.67	22.89	16.22	19.24
Gross cost of maintaining one cow, per year ...	$34.23	$55.30	$43.43	$41.75	$43.53
Credits, other than calf.....	4.79	52.12	25.69	22.25	31.95
Net cost of maintaining one cow..	29.44	3.18	17.74	19.50	11.58
Cost of raising a calf until weaned (6 to 8 months)....	36.73	20.06	29.33	25.47	17.07
Cost of raising yearling[a].....	51.29	33.18	43.85	38.94	29.36

* Federal Trade Commission, *The Meat Packing Industry*, Part VI, p. 12.

[a] Based upon a somewhat smaller number of farms than are the previous figures.

The outstanding feature of this table is the wide difference in costs under the different systems of management. Thus the cost of raising a yearling under the straight beef system, namely $51.29, was 75 per cent greater than the cost under the double-nursing system, namely $29.36. This difference was due chiefly to the lower net cost of maintaining a cow under the latter system owing to the large credit to milk.

The same study shows marked differences in cost from state to state and from year to year under the same management. In 1916, for example, the net cost of maintaining a cow of the beef type ranged from $23.87 in Nebraska to $30.32 in Iowa, while the cost of raising a yearling under the same system ranged from $41.59 in Nebraska to $51.99 in Iowa. Within the three-year period the annual average costs fluctuated all the way from $47.28 to $55.08 under the straight-beef system, from $21.36 to $42.40 under the dual-purpose, from $38.34 to $49.38 under the mixed, from $33.04 to $43.71 under the partially-milked, and from $25.80 to $42.13 under the double-nursing.

Costs of production on the range. In 1914 costs of raising yearlings and 2-year-olds in 11 range states were obtained.[3] These were as follows:

AVERAGE COST OF YEARLINGS AND TWO-YEAR-OLDS IN ELEVEN RANGE STATES, 1914
(Dollars per head)

State	Yearling	2-year-old
Arizona	$19.45	$25.27
California	27.51	40.00
Colorado	30.50	43.46
Idaho	31.34	45.10
Montana	32.89	47.90
Nevada	31.25	44.46
New Mexico	18.36	25.30
Oregon	31.13	45.70
Utah	31.43	44.66
Washington	33.45	50.54
Wyoming	25.75	35.29
AVERAGE	$28.46	$40.70

[3] U. S. Department of Agriculture, Office of Secretary, Report No. 110.

Here again, wide variations characterize the costs, the highest being practically double the lowest. The lowest costs, it will be noted, occur in the Southwest, that is, in Arizona and New Mexico; the highest, in the Northwest. High charges for pasture and the necessity of winter feeding largely account for the higher costs in the central and northern range states.

Another study of range costs was made in Oklahoma and Texas during various years of the period 1913–17.[4] Studies were made on 12 ranches, but only seven of these are based on conditions sufficiently comparable to be here shown.

COSTS OF RAISING STEERS OF SPECIFIED AGES ON TEXAS AND OKLAHOMA RANCHES, 1913–17

Ranch number	Period covered	Calf (8 months)	20-month-old steer	32-month-old steer
1	1914–17	$35.05	$49.28	$65.30
2	1915–16	35.47	52.15	70.92
6	1913–17	51.15	73.09	97.67
7	1913–17	48.41	....	....
8	1914–17	38.37	57.01	77.12
9	1913–17	46.23	65.61	....
12	1913–17	44.03	62.63	84.58
AVERAGE COST		$42.68	$59.96	$79.12

Aside from a spread of about 50 per cent between the low and high costs of each type of animal, the most noteworthy feature of this table is the generally high level of costs. Thus the average cost of raising calves was 20 per cent higher than that of raising calves from beef cows in

[4] Federal Trade Commission, *The Meat Packing Industry*, Part VI, p. 39.

the Corn Belt during the period 1914–16.[5] Similarly, the average cost of 20-month-old steers was practically 1½ times the average cost of raising 24-month-old animals in 11 range states in 1914 and 2½ times the cost in New Mexico and Arizona.[6] For 32-month-old steers the average cost — including marketing charges of from $2.85 to $4.00 per head — was actually higher than the average cost, laid down at the farm, of 47,000 head of feeder cattle fattened in the Corn Belt during the same period; namely, $79.12 as against $67.08 a head. These apparent discrepancies may be explained in part, however, by the fact that a period of drought from 1916 to 1918 necessitated expenditures for dry feed sometimes more than treble the customary outlays.

Costs of fattening cattle in the Corn Belt. More detailed and in some ways more useful than the foregoing studies are those that have been made of the cost of fattening cattle in the Corn Belt. Besides showing the variations of costs by years, by states, and even by individual farms, they serve to illustrate the difficulty of ascertaining the true cost of production for a particular farm. They possess the advantage, moreover, of being convertible to a poundage basis, and they are the only available costs running through a considerable number of years. It should be remembered, however, that they include the profit (or loss) upon the feeder cattle at the time of their purchase for fattening.

The table on page 279 shows the trend of net costs of corn-fed steers in various Corn Belt states from the winter of 1912–13 through that of 1921–22.

An important feature of this table is the trend of costs

[5] See table on p. 275.

[6] See table on p. 276.

COST OF FAT STEERS IN THE CORN BELT, 1913–22*

(Cost per 100 pounds sale weight, laid down at market)

Winter	Illinois	Missouri	Nebraska	Iowa	Indiana	Kansas	Average, all states
1912–13	$ 7.91	$ 7.70	$ 7.06	$ ..	$ ..	$ 7.51	$ 7.80
1913–14	8.22	8.02	8.75	..	..	9.36	8.59
1914–15	9.13	10.00	9.30	..	..	9.46	9.47
1915–16	9.06	9.03	8.93	..	..	8.78	8.95
1916–17	9.79	10.30	10.39	..	..	10.67	10.29
1918–19	15.18	13.50	14.66	15.12	15.10	..	14.71
1919–20	14.94	13.70	13.63	13.76	14.31	..	14.07
1920–21	10.29	10.38	10.31	9.91	10.22	..	10.22
1921–22	7.05	7.42	6.40	6.71	6.62	..	6.84

* After 1916–17, Kansas was dropped, and Iowa and Indiana were added to the group of states furnishing data. In Illinois, Missouri, and Nebraska there were also changes at this time in the counties where costs were ascertained. For it should be noted that these studies were made only in certain counties which were deemed typical. For the year 1917–18 no data are available.

in the Corn Belt during the decade. During the five years prior to our entrance into the World War the trend was distinctly upward. Analysis of the detailed items from which the foregoing table is derived indicates an average increase of about 50 per cent in the cost of feed during this period and of about 7 per cent in the initial cost of the cattle. During the five-year period, the cost of the feeder cattle averaged approximately 58 per cent, and the cost of feed about 32 per cent, of the gross cost[7] of the fat cattle. Owing to the decline in prices of lean animals and feeds, costs of fat animals fell precipitately after 1920.

Another feature of the table is the variation of costs from state to state. This is not large when an average of several years is taken, but it is large in individual years.

[7] The cost before deducting credits to hogs and manure.

Thus in 1922, the cost per hundred was $1.02 higher in Missouri than in Nebraska — a spread equal to more than half of the entire duty levied upon fat cattle in the Act of 1922. Nor was this due to the difference in the original costs of the feeder animals, since those for Nebraska were actually higher. It was, in this instance, due wholly to the difference in feeding cost, which amounted, *per pound of gain*, to 10.8 cents in Missouri and 7.4 cents in Nebraska.

Such variations of cost from state to state are, however, moderate when compared with those amongst different droves of cattle from farm to farm in the same community. For example, the Nebraska cost bulletin for 1919–20 indicates that the cost of 103 droves (3041 head) of cattle in Burt County varied from $8 to $22 per hundred. The average cost of these cattle was about $14, but large numbers were produced at costs varying all the way from $12 to $19 per hundred. In cost per pound of gain these same cattle varied from 10 to 50 cents, with large numbers ranging from 15 to 35 cents.

The factors accounting for these wide variations are numerous. Among them may be mentioned the purchase price of the feeder cattle, their weight and condition, the methods used in feeding, the kind and the market value of the feed-stuffs, and the length of time on feed. There are probably no two droves, or communities or states for that matter, where these conditions are exactly alike. Such differences are, in fact, inherent in an industry of this character.

The table on page 281 contains a summary of the financial results of cattle-feeding in the Corn Belt during the 4-year period, 1919–22, based on studies in certain counties.

An important feature of this table is the trend of individual items of cost since the winter of 1919–20. Every

COSTS AND PROFITS OF FEEDING CATTLE IN THE CORN BELT, 1918–19 TO 1921–22

(Based on simple average of the results in selected counties in five states: Iowa, Missouri, Nebraska, Illinois, and Indiana)

Item	1918–19	1919–20	1920–21	1921–22
Total number of cattle fed	13,540	20,959	20,051	22,932
Initial weight per head (in pounds)	730	799	846	801
Final (sale or fat) weight per head (in pounds)	1,027	1,076	1,151	1,101
Cost of feeder animal per 100 lbs. purchase weight	$10.26	$ 9.82	$ 8.46	$ 5.86
Costs: Per 100 lbs. sale or fat weight				
Cost of feeder animal per 100 lbs. sale weight	7.290	7.294	6.220	4.264
Feed	7.401	6.975	3.346	2.502
Labor	.614	.471	.413	.252
Interest:				
On feeder animal	.233	.231	.230	.151
On equipment	.187	.168	.149	.098
Buildings and equipment	.177	.150	.120	.098
Miscellaneous	.197	.147	.132	.110
Marketing	.222	.247	.349	.256
Gross cost	16.321	15.683	10.959	7.731
Credits: Per 100 lbs. sale weight				
Manure	.451	.631	.255	.252
Pork	1.151	.980	.473	.618
Net cost per 100 lbs. laid down at market	14.719	14.072	10.231	6.861
Sale price	14.190	12.453	8.291	7.885
Profit (feed charged at cash farm prices)	....	....	....	1,024
Loss	.529	1.619	1.940	....
Net cost per pound of gain	.258	.266	.154	.097
Price received per bu. for corn fed to cattle	1.32	.78	.13	.67
Average cash farm price of corn	1.49	1.39	.52	.42

cost except marketing has declined, but the decline has by no means been uniform. In the case of the two most important items, namely feeder animals and feed, the costs in the winter of 1921–22 had fallen to three-fifths and one-third, respectively, of the costs in the winter of 1918–19. During the war they amounted, each, to about 45 per cent of the gross cost of the fat animals; in 1921–22, to about 55 and 33 per cent respectively. Labor costs show a decline of about one-half; other costs, somewhat less. The decline in credit to pork follows in a general way the trend of the hog market.

Reckoning the cost of feed at farm prices, cattle-feeders actually lost money on their operations in 1919, 1920, and 1921, but made a considerable profit in 1922. On the basis of these figures, feeders who purchased their feed suffered actual monetary losses during the first three winters; and those who utilized home-grown feed sacrificed part or all of the profit that would have accrued from direct sale of the feed (ignoring for the moment such effect as the direct sale of feed might have exerted upon feed prices). That too much importance may be attached to such figures will be apparent, however, from the discussion which follows.

Inaccuracy of foregoing costs for tariff purposes. The costs summarized herein cannot be taken as accurate, even for a particular ranch or farm, since they include items some of which are not real costs and others of which are at least doubtful. Some of these items, such as certain charges to interest and depreciation, are separable from the other costs and may, in so far as it is desirable, be excluded; while others, such as value of roughage consumed by the cattle and some of the charges to labor and equipment, are indeterminable but certainly excessive. The seriousness of such inaccuracies depends upon the purpose for which the costs are used. When the purpose is to compare crop-raising with cattle-raising or feeding, or beef production under different systems of management or on different farms, the results are less seriously affected than when the purpose is to show the difference in costs here and abroad. In the same general region, as for example the Corn Belt, the conditions of production, hence the cost-accounting difficulties, are much the same for the different crops, so that in the ascertainment of their relative costs precision is not required. But when

the comparison of domestic costs is with those in a country where the conditions of production are quite different, as in Argentina, and where the same cost difficulties either do not occur or bear a very different relation to the total cost, lack of precision becomes an important matter.

Take, for example, the costs in the Corn Belt. In this branch of the industry there is a large utilization of resources which, were it not for cattle-feeding, would be partly or wholly wasted. Large quantities of unsalable roughage are debited at a low value, whereas most of it would otherwise be pure waste. On many farms, land suitable only for pasture is utilized. Labor which would otherwise be partially or wholly idle during the winter is charged to cost whether performed by the feeder or by hired help. Finally, a return is obtained for capital investment in equipment put to a fuller use as a result of cattle production. All of these items contain real elements of profit to the producer.

It is, in fact, the inclusion of such items which helps to explain the continuance of cattle-feeding in the Corn Belt on an undiminished scale despite apparent average losses for the past decade. Of the nine years for which data are available during the period 1912–13 through 1921–22 (the year 1917–18 being lacking), five were years of loss when feed is charged at the farm price. The average annual loss during these five years was more than double the average annual gain during the profitable years. Even for the entire nine years, the loss averaged $3.42 per head. It is true that this apparent loss must have been greatly reduced, perhaps even wiped out, by the hidden profit in the feed. Yet if this were the only saving circumstance, cattle-feeding would presumably have declined, since it would have been relatively unprofitable.

Apart from persistent ignorance of the facts by the feeders themselves or the possibility that the costs obtained are not typical, the only remaining explanation of this anomaly would seem to be the more or less unavoidable inflation of the costs as above described.

Another set of difficulties arises in connection with the treatment of interest. Interest on land investment is included in the foregoing range costs through the charges made to pasture, and perhaps also through the charges to dry feed at farm prices. In the Corn Belt it is included, if at all, only in this latter sense. Interest on cattle investment is also included in all of the costs except those in the western range states in 1914.[8] Of the net cost of yearlings raised in the Corn Belt it constituted from 2 to 3 per cent; of the net cost of two- and three-year-olds in Oklahoma, it averaged nearly 6 per cent, and of yearlings, 20 per cent. Finally, all of the costs except those in the range states in 1914 include interest on equipment. This indiscriminate inclusion of interest, while not seriously objectionable for domestic cost comparison, is of vital importance in connection with international cost comparisons. Since the treatment of interest has even a more important bearing upon the Argentine costs, however, the analysis of this problem is for the moment postponed.

Again, the item of depreciation is not always properly treated. For example, the costs of yearlings and 2-year-olds on western ranches in 1914 include charges for depreciation of the breeding herd amounting, respectively, to about 7½ per cent and 4 per cent of the average net cost. This is not a legitimate charge, since the herd is

[8] In the Corn Belt it is at least included during the fattening period, but it may not always be included in the purchase price of the feeder animals.

self-perpetuating and the cost of replacement of old cows by heifers is already covered in the cost of rearing the latter.

Finally, a serious difficulty arises in connection with the practice of charging in home-grown feed at the farm price rather than at the actual cost. Both the Department of Agriculture and the Tariff Commission carefully draw attention to the inclusion of a concealed profit (or possible concealed loss) in this item. When, as in winter-fattening in the Corn Belt, dry feed is an important factor in the cost and the greater part of it is home-grown, charging it at the farm price may quite truly conceal a considerable profit. That this practice is not justified from the standpoint of strict cost-accounting seems obvious. But is it not justified in connection with international cost comparisons for tariff purposes?

From one point of view it would appear to be justified. It may be argued that the "cost" which is significant is one which takes into account all the forces bearing on the supply of the product. The hidden profit in the feed is a profit from crop-raising, not from cattle-feeding. If the cattle-feeder normally fails to earn a profit in excess of that which is concealed in the feed, he can continue in the feeding business only by sacrificing a part of his profit from other farming operations. Once he understands this, he will presumably stop feeding and the supply coming to market will fail. From this point of view it is what might be called the "opportunity" cost of his feed that is really significant.

But it will be seen that what is actually being obtained is not the true cost at all. It is rather the "cost" which it is felt should be reimbursed in the price in order to maintain the output. It does not really measure the competitive strength of the man who produces his own feeds,

for he could still continue to compete with the foreigner so long as he were reimbursed for the actual cost of feed along with his other costs. True, unless his profits on the feeding operations exceeded those which he might have obtained by selling his feeds, it would not pay him to continue feeding; but if many adopted this policy the market for feeds would not hold up. It would seem preferable, therefore, not to confuse what it is thought the cattle-feeder is entitled to obtain for his animals with what they actually cost him. If the duty indicated as necessary to equalize actual costs were then thought to be too small to maintain production, this is a matter which should subsequently be allowed for as a separate factor in the competitive situation. The point is, however, a difficult one and is significant here, if for no other reason, because it illustrates one of the many obstacles that arise in attempting to fix duties by the cost rule.

II. COSTS OF PRODUCTION IN ARGENTINA

Sources and character of data. There are no available cost data for the Argentine cattle industry in the form of actual returns from the records of cattlemen. Two sets of estimates are, however, available. One, based on the high-cost years 1918–20, is published by the U. S. Tariff Commission.[9] It includes both the cost of cattle and the cost of dressed beef. The other, based on the year 1922, was made by the Rural Society of Argentina for the National Livestock Bureau and is reproduced in a recent bulletin of the U. S. Department of Agriculture.[10]

[9] U. S. Tariff Commission, *Cattle and Beef in the United States*, pp. 61–5.

[10] U. S. Department of Agriculture, Report No. F. S. 29, *The Cattle Crisis in Argentina*, April, 1923, p. 37 ff.

It includes only the cost of live cattle at the ranch. The same bulletin, however, contains a separate statement by the packers of their cost of dressed beef for 1922.

Cost estimates obtained by the U. S. Tariff Commission for the years 1918–20. The table on page 288 presents a digest of the cost data obtained by the Tariff Commission, covering the years 1918–20. The original data consist of estimates made by ranchers and cattle dealers.

Including interest on cattle and land investment, it will be seen that for the period 1918–20, the cost of steers, laid down at the market, is estimated to have been $6.59, $6.50, and $4.89 per hundred for the three respective ranches. In the first two instances, however, the cost includes the profit taken by the cattle-raiser when his steers were sold for fattening, while in the last no profit whatever is included in the cost, this profit being deferred until the steers were fattened and sold. Since fewer animals will be sold annually from a breeding and fattening ranch (that is, from a self-perpetuating herd) than from a ranch of the same carrying capacity devoted exclusively to fattening, it is obvious that there must be a much greater profit in the first case than in the second, per hundred pounds sold, if the same rate of return is to be made upon the investments. The first represents profit from operations over about 32 months (deferred until the animal is finally sold); the second, profits from operations over some 7 or 8 months.

Taking 730, 730, and 630 pounds, respectively, as the dressed weight of the steers sold from the three ranches, the gross cost per pound, dressed, was slightly over 13 cents. After by-products were credited the net costs were estimated at 9.22, 9.22, and 9.26 cents per pound. Allowing approximately a cent per pound for preparing for

ESTIMATED COST OF PRODUCING BEEF IN BUENOS AIRES PROVINCE, ARGENTINA, 1918–20*

(Figured at par exchange: 1 peso = 42.5 cents)

Item	1 Alfalfa ranch: fattening 4000 steers	2 Fine-grass ranch: fattening 6000 steers	3 Alfalfa ranch: breeding and fattening the offspring of 2000 cows
I. AGRICULTURAL COSTS — In dollars per 100 lbs., sale weight			
Ranch costs:			
Labor and supervision	$.1610	$.1073	$.6291
Ensilage, hay, etc.	.0197	....	.0856
Inoculation	.0164	.0164	.0571
Machinery, auto, etc.	.0328	.0137	.1427
Total ranch cost	.2299	.1374	.9145
Charges against profits:			
Land rental[a]	.4425	.4425	2.0551
Interest on cattle investments[b]	.3147	.3147	1.1705
Total charges against profits	.7572	.7572	3.2256
Selling costs:			
Freight	.2545	.2545	.3030
Commission on sales	.1084	.1084	.1026
Total selling costs	.3629	.3629	.4056
Total cost of fattening and marketing	1.3500	1.2575	....
Initial cost of steers per 100 lbs. fat	5.2447	5.2447	....
Total cost of cattle, including marketing	6.5947	6.5022	4.5457[c]
Cost of steers, including marketing	6.5947	6.5022	4.8935[d]
Sale price of steers to packers	7.0763	7.0763	7.5145
Profit to cattlemen	.4816	.5741	2.6210[e]
II. INDUSTRIAL COSTS — In cents per pound, dressed			
Gross cost of carcass to packers[f]	13.10 ¢	13.10 ¢	13.14 ¢
Credit to by-products[g]	3.88	3.88	3.88
Net cost of dressed beef	9.22	9.22	9.26
Cost of dressed beef ready for export	10.34	10.34	10.34
Cost of dressed beef, landed, London:			
Chilled[h]	13.39	13.39	13.39
Frozen[h]	13.11	13.11	13.11

* Based on data in Table 16, p. 62, Report of U. S. Tariff Commission, *Cattle and Beef in the United States.*

[a] At 6 per cent on ranches of 3,000, 3,000 and 4,000 hectares (7,410 and 7,880 acres), respectively, valued at $51.61, $77.43, and $51.61 per acre. Sale weight of animals sold aggregated 51,862 pounds, 77,792 pounds, and 14,890 pounds, respectively, for the three ranches.

[b] At 6 per cent on cattle investments of $272,000, $408,000, and $290,488 on the respective ranches.

[c] Refers to 1,100 long 2-year-olds, sold at 195 pesos ($82.88) per head, and 250 cows, sold at 100 pesos ($42.50) per head.

[d] Expenses pro-rated to steers in the same proportion as steer receipts are to total receipts, that is, 89.56 per cent.

[e] This is the combined profit from raising and fattening a steer, whereas the profits in columns 1 and 2 are profits from fattening only.

[f] Based on dressed weights of 730, 730 and 630 pounds, respectively.

[g] 29.66 per cent of gross cost. Applies to 1919 costs. Furnished by a prominent Argentine packer.

[h] Based on 1919 and supplied by same packer as above.

export and about 3 cents per pound for ocean freight, the cost of landing this beef in London was estimated at between 13 and 13½ cents per pound.

It will be noted that the charges to land rental and interest on cattle investment are by far the most important of the expense items. Together, they comprise nearly three-fifths of the expense of fattening and marketing steers on the first two ranches, and more than two-thirds of the total expense of raising, fattening, and marketing steers on the third ranch. If they were excluded in this latter instance, the total cost of production and marketing would be $1.42 instead of $4.89 a hundred. Their inclusion thus results in a large hidden profit, based on imputed costs, to the operator who owns his land or who breeds his own animals (assuming these to have increased in value over the original cost), and raises cost-accounting difficulties of vital importance. These, however, can be more conveniently discussed after all of the cost data have been presented.

Cost estimate made by the Rural Society of Argentina for the year 1922. A more recent estimate is that made by the Rural Society of Argentina, as shown in the table on page 290. It refers to raising and fattening cattle on an alfalfa ranch. It does not, however, extend beyond the cost of the live cattle at the ranch. There is no estimate of marketing costs nor of the final cost of the dressed beef.

It will be seen that when allowance is made for marketing costs, this estimate for 1922 is higher than the one for 1918–20 obtained by the Tariff Commission. Exclusive of marketing, the average cost of all the animals sold from the breeding and fattening ranch in 1922 was $4.42 a hundred as against $4.14 in 1918–20. Yet the earlier costs are based on a period when war-time conditions still

ESTIMATED COST OF PRODUCING CATTLE IN ARGENTINA IN 1922
(Converted at average exchange rate for 1922: 1 peso = 35.998 cents)

Expense Items	Cost of animals sold (Per hundred lbs.)
Ranch costs: Total	**$ .7481**
Labor and supervision	.2554
Ensilage, hay, etc.	.1554
Taxes	.1463
Depreciation of bulls	.1774
Miscellaneous	.0156
Charges against profits: Total	**3.6709**
Land rental at 8 per cent	3.0871
Interest on investment in animals at 8 per cent	.5625
Interest on investment in equipment	.0213
Total cost at ranch, including rent and interest	**$4.4190**

persisted and cattle prices were about double those in 1922.

The chief explanation is to be found in the rent item. Though one estimate is based on the period 1918–20 and the other on 1922, both place a valuation of approximately $51 per acre on land the carrying capacity of which is presumably about the same in both instances. The charge to rent is $2.05 a hundred in 1918–20 and $3.08 in 1922. The first is based upon 6 per cent, the second, 8 per cent; but even if the first were figured at 8 per cent, it would be only $2.75.[11] The truth is that the valuation

[11] Nothing is said in the report of the Tariff Commission as to the reason for figuring rental of the breeding and fattening ranch at 6 per cent per annum. The rate taken by the Rural Society accords more closely with the level of interest rates and coincides with the *basic* rate adopted by the Tariff Commission on the other two ranches, which were devoted exclusively to fattening.

of the land in the 1922 estimate is far in excess of its current earning power. Commenting upon this, the Department of Agriculture says:[12]

"The obvious criticism of this computation is that the land value is higher than would be justified by the value of the product, under normal conditions. Since, as we have seen, the average prices of cattle in 1922 were only slightly lower than the average for 1909–13 and actually higher than the average for 1909–12, the prospect of earning eight per cent interest on a valuation of $51 per acre under peace time conditions would appear to be hopeless. If, as Consul Bonney suggests, the land value were taken at $25.50 per acre, with the value of cattle and equipment and expense items remaining the same, * * * the total cost per hundred pounds of cattle sold would then be only $2.88 instead of $4.42." [13]

That the real cost of producing cattle on such a ranch as the above, except for renters, was distinctly less than $4.42 a hundred in 1922 must be clear. It is true that those who rented land at the war-time valuation actually had to meet this excessive charge for rent, and that some of them must have suffered actual losses because of the lag in the post-war decline of this item. However abnormal rents may have been, they were, for such producers, actual costs. If, therefore, the renter of land be taken as the typical producer, it is clear that costs will be much higher than if the owner be taken as typical. Which shall be chosen? And are costs based on so abnormal a period fit for use in measuring tariff duties? Here are further difficulties in applying the cost formula.

[12] *The Cattle Crisis in Argentina*, pp. 37–8.

[13] The report also calls attention to the point that this cost is probably higher than would be the case were the cattle bred on cheaper ranges in the arid regions and then fattened on an alfalfa ranch. This latter system requires less land investment per animal and is in extensive use.

Statement of dressed beef costs for 1922 made by Argentine packers. Data on Argentine dressed beef costs are contained in a communication addressed by the packing companies to the chairman of the committee on livestock matters of the National Chamber of Deputies.[14] The following statement is derived from this communication.

COST OF PRODUCTION AND MARKETING OF BEEF IN ARGENTINA IN 1922

(Converted at average exchange rate for 1922: 1 peso = 35.998 cents)

Items	Cents per pound
Cost of live animal to packer	3.8400
Cost of slaughtering and dressing	.8351
Gross cost of dressed beef per pound, live weight	4.6751
Credit to by-products	1.3538
Net cost of dressed beef per pound, live weight	3.3213
Net cost of dressed beef per pound, dressed weight[a]	5.7264
Cost of transportation and sales, including 1 per cent shrinkage in ocean transit	2.8786
Cost ready for wholesale, London	8.6050

[a] Dressing 58 per cent of live weight.

It will be noted that the price paid by the packers for their live animals was $3.84 a hundred, whereas the Rural Society estimated the cost of production, exclusive of marketing costs, at $4.42. That the price of $3.84 quoted by the packers is substantially accurate is shown by the fact that in 1922 the average price of chilled beef steers — which are usually of better quality than the average of all

[14] U. S. Department of Agriculture, *The Cattle Crisis in Argentina*, Appendix II.

export steers — was $3.94.[15] The source of the difficulty is the Rural Society estimate of $4.42, which consists chiefly of rental based on war-time earnings. It is evident that only cattlemen who actually incurred such rental as an expense were necessarily losers.

III. COMPARISONS OF ARGENTINE AND DOMESTIC CATTLE AND BEEF COSTS

Comparison made by the Tariff Commission for the period 1918–20. In the absence of satisfactory cost data for grass-fed beef in the United States, the Tariff Commission compared the Argentine cost of "grass beef" with the domestic cost of corn-fed beef, though the latter is of distinctly better quality. The figures are as follows:

Comparative Costs of Cattle and Beef in Argentina and the United States, 1918–20*

(In cents per pound)

Item	Argentina (Grass-fed beef)	United States (Corn-fed beef)	Difference in favor of Argentina
Average price paid by cattle-feeders for thin cattle (purchase weight)	6.3	9.9	3.6
Cost of finished animals (sale weight)	6.6	14.3	7.7
Average price at which sold to packers	7.25	13.14	5.89
Net cost of dressed carcass to packers	9.25	17.33[a]	8.08

* U. S. Tariff Commission, *Cattle and Beef in the United States*, 1922, p. 83.

[a] The report does not state the basis for this estimate.

[15] U. S. Department of Agriculture, *The Cattle Crisis in Argentina*, Table VII and Appendix II.

It will be seen that the difference in cost of dressed beef in 1918–20 was found to be over 8 cents per pound and that this was due almost wholly to the difference in the cost of live cattle, namely 7.7 cents per pound, live weight. The Commission report points out, however, that this difference was partly nullified by the difference in quality of the beef and also in part by the storage and shipping charges in marketing from South America. It further points out that costs of raising and fattening cattle had increased relatively much more in the United States than in Argentina during the war, and that after 1920, owing partly to the decline in prices of feeder cattle but more largely to the decline in cost of feed, they fell relatively more than in Argentina. Even though the relative decline were the same, the deflation of prices would, of course, tend to lower the cost differential. The normal disadvantage of the United States must therefore be considerably exaggerated by this cost comparison.

Comparison made by the Department of Agriculture for 1922. As a rough indication of the difference between the cost of production of cattle in Argentina and that in the United States in 1922, the Department of Agriculture compares with the estimate of the Rural Society already discussed the actual costs on a Colorado ranch of 6,000 acres.[16] The comparison is with grass-fed, not corn-fed, animals. As against a total estimated cost of $4.42 a hundred in Argentina, the cost on the Colorado ranch was $4.83. But this, as the report makes clear, is quite misleading. In Argentina the ranch cost was $0.75 a hundred, the charges against profits $3.67. In Colorado the ranch cost was $3.56, the charges against profits $1.27. The much higher ranch cost in Colorado — nearly four times

[16] *The Cattle Crisis in Argentina*, pp. 37–41.

that in Argentina — was owing to the greater expenditures that must be made for feed and labor and is perhaps not unreasonable in view of the very different conditions of production in the two countries. The real difficulty consists in the heavy charges against profits in Argentina arising from the excessive charge to rent already discussed. Although the carrying capacity of the Argentine ranch was only about three times that of the Colorado ranch,[17] the valuation of the land per acre was nearly fourteen times greater.[18] This, together with the higher interest rate, is responsible for the fact that in Argentina the rental charge per hundred pounds amounted to $3.08 whereas in Colorado it amounted to only $0.62.

It is, therefore, perfectly clear from this report that the advantage of Argentina, except in the case of producers who actually paid rent based on current values, is greater than indicated above. By precisely how much the report does not presume to say. It indicates that the rental charge in Argentina is excessive; that there is no assurance that either the Argentine or the Colorado cost is thoroughly typical; indeed that the Argentine estimate, since it refers to costs only in the alfalfa region and ignores them in the lower-cost semi-arid region, is *not* wholly typical. The report concludes the discussion of costs as follows:

[17] Number of acres per animal: Argentina, 2.2, Colorado 7.1.

[18] Value per acre: Argentina, $50.75, Colorado, $3.64. This contrast is exaggerated to some extent, however, by the apparent inclusion of improvements with the Argentine valuation, whereas they are excluded from the Colorado valuation. In Colorado the value of the improvements was almost as great as the value of the land. In Argentina improvements would certainly cost relatively much less, owing to the more equable climate and hence the smaller need for shelter. Yet fences, water facilities, and so on, must amount to considerable.

"It seems justifiable, therefore, to assume that the ranch cost in Argentina is exceedingly low, and that the chief loss of the cattle producers consists in their inability, under present price conditions, to earn the usual rate of interest on high land value."

Significance of the foregoing comparisons. Neither of the foregoing comparisons of costs furnishes an adequate basis for the determination of a duty which will equalize the difference in cost of production of dressed beef as between the United States and Argentina. The comparison made by the Tariff Commission has the advantage of being based upon extensive domestic cost data and upon Argentine estimates which were supplemented by field study. But its usefulness is greatly impaired by the fact that it is based on war-time conditions and by the difference in the quality of the beef. It has little bearing on present conditions. Moreover, the cattle costs which are compared include the profits from breeding and rearing; while the dressed beef costs also include the profits from fattening. The data upon which the comparison is based throw some light, therefore, on the competitive situation; but it is impossible to conclude from them, even for the period to which they relate, what the difference in costs of production really is.

Though in some ways more serviceable, the comparison made by the Department of Agriculture is likewise inconclusive for tariff purposes. It is, to be sure, more recent and hence less distorted by war conditions than the other comparison, and it relates to items which are more truly comparable — both of them "grass beef." But it is based upon meager, and in part misleading, data. As the Department of Agriculture points out, there is no assurance that either cost is based on thoroughly typical conditions.

Certainly, as regards Argentina, they are not; whilst the selection of a single ranch as typical of domestic costs is hardly tenable. Even if the data were thoroughly typical, however, a comparison based upon such abnormal conditions as continued to prevail in Argentina in 1922, when land values were still highly inflated, would be of doubtful value for tariff purposes.

Rough comparison of "costs" of dressed beef in 1922. The report of the Department of Agriculture, while reproducing the statement of the Argentine packers that has been given above relative to their cost of dressed beef in 1922, makes no attempt to compare this with the domestic cost. The data available for such a comparison are in fact so meager and so unsatisfactory as to make it of doubtful value. According to the *Yearbook* of Swift and Co. for 1923, the average price paid by them for cattle in 1922 was $6.41 a hundred, live weight, expenses were $1.33, and credit to by-products was $1.33; so that with a dressed yield of 54.14 per cent the final net cost a hundred pounds, dressed, was $11.84. The net cost in Argentina was, according to the statement of the packers, $5.73 a hundred, dressed. Figured in this manner, the difference in cost was $6.11.

Neither statement is, however, sufficiently explicit to inspire confidence in the comparison. For example, there is nothing to indicate precisely the respective grades of beef compared. The Argentine beef is derived from the "export type" of steers, weighing 1,207 pounds; the domestic appears to be a hodge-podge of all types slaughtered. In Argentina the credit to by-products is shown to exceed the expenses by 64 per cent, while in the United States the two are shown to be equal. Normally, however, receipts from by-products exceed expenses, and in all

years from 1915 to 1920 they were, according to Swift's *Yearbook*, from two to three times the expenses. Again, such a comparison as this proves little as to the real cost of producing beef in either country. If the cattle are sold to the packers at a substantially higher profit in one country than in the other, the real competitive position is not revealed. Such figures must be taken on faith.

IV. INTEREST AS A COST FACTOR

Importance of interest in comparing Argentine and domestic cattle costs. In the foregoing cost comparisons the question of whether interest on investment in land, cattle, improvements, and equipments, are legitimate items of expense has been ignored. Yet, as we have seen, these charges against profits constitute the major portion of the Argentine costs, whereas in the United States they are less important. In so far as they are excluded, therefore, the difference in cost will be widened, and if all are excluded the difference in the results will be vital. Take, for example, the comparison for 1922 made by the Department of Agriculture. Including interest, the difference in cattle costs at the ranch is \$0.41 a hundred; excluding interest, the difference is \$3.27. It is true that the similarity of costs when interest is included is due in considerable measure to the excessive rental charge in Argentina; but even if this charge were cut in half, the difference in cost would still be only \$1.95. Hence, by excluding interest the difference in cost is increased by \$2.84, or by \$1.32 if rough allowance be made for excessive rental — that is to say, by an amount comparable with the entire duties of 1½ and 2 cents per pound in the Act of 1922. In terms of dressed beef these figures would be about doubled. Comparisons of cost, even though used merely

as one indication of the competitive situation, cannot mean much, therefore, unless there is a decisive treatment of interest charges.

Brief analysis of problem of interest. There is no one correct and practicable method of treating interest charges in connection with international cost comparisons. Distinction must first be drawn according to the nature of the investment, that is, whether in the form of land, livestock, or equipment; and the inclusion or exclusion of each charge must be justified with respect to the facts in the particular case under consideration. Even so, decision will frequently be very difficult. Pointing to this conclusion and peculiarly applicable to the present study is the analysis of the problem of interest made by the Tariff Commission in its report on *The Wool Growing Industry*.[19]

Briefly, the arguments presented are as follows: (1) that a true definition of costs should include all items of expense which must be re-imbursed in the market price in order to keep up the supply of goods, and therefore in a competitive regime interest must be considered as much a part of the cost as labor or raw material — except where there is no alternative use for the land or capital, in which case production will continue until the imputed rent (or interest) falls to zero; (2) that a true comparison of costs under different productive methods, requiring different investments in capital equipment, cannot be made without including interest. Against inclusion, on the other hand, are the following arguments: (1) that practical difficulties of valuation may render the interest charge largely arbitrary — illustrations of which are to be found in the many shifting factors affecting the value of range

[19] U. S. Tariff Commission, *The Wool Growing Industry*, pp. 205–8.

lands more or less remote from settlement, such as uncertainty of free range or of access to national forests, and the development of irrigation projects; or again, in the case of improvements and equipment with their problem of original cost, depreciation, and cost of replacement; or finally in the case of livestock with its shifting market values in the course of a year; (2) that the inclusion of interest is fundamentally objectionable in that the value of the livestock, and in less degree the land, depends upon the profitability of the industry, so that to include interest is to absorb the net income and make any comparison of costs impossible.

The conclusion of the Commission is that for purposes of international cost comparison "the interest on some of the assets should be included under certain conditions, unless practical difficulties render the charge uncertain." More concretely, the conclusions are: (1) that, in general, the interest on permanent equipment should be included, so that costs under different systems of production will be comparable; (2) that interest on the value of the livestock (in this particular case, sheep) should never be included, because the value is the result of the profitableness of the industry, and costs which include interest on such value really beg the question; (3) that interest on land (or rent) should be included when the land can be used for some other purpose, otherwise it should be excluded.

Application of the foregoing to the case in hand. In the light of the foregoing analysis, it seems proper, wherever the item is separable, to exclude interest on investment in cattle both here and in Argentina. It is in fact separable from the comparison of "grass beef" costs in 1922, but it is only partially separable from the earlier comparison of "grass beef" with "corn-fed beef" costs made by the

Tariff Commission.[20] On the other hand, it seems clear that interest on investment in improvements and equipment have been properly included in the foregoing comparisons.

More vital and difficult, however, is the question of rent. In so far as the decision turns upon the existence of an alternative use for the land, some charge to rent should be included in both the Argentine and the domestic costs. For in both countries the land does have at least one other possible use, namely, sheep-raising. This is true even of the poorest range lands, while in the alfalfa regions of Argentina and in the Corn Belt of the United States the possible uses are numerous. The mere existence or non-existence of an alternate use is, however, hardly an adequate criterion. The facility with which the land may be diverted to other uses and the relative profitableness of such uses may also be important. Peculiar difficulties in shifting from cattle to sheep-raising, for example, especially if accompanied by uncertainty of material enhancement of profit (or imputed rent), may retard, even prevent, the transition. Hence where costs in a semi-arid region are involved in the comparison, as for example the Colorado costs above, the case for inclusion of rent is by no means clear-cut.

Added to this is the practical difficulty of valuation. If all producers rented their land, no matter how inflated the land values upon which their rents were based, there would be no valuation problem. True cost-finding would

[20] The costs compared by the Tariff Commission include interest on cattle investment only during the period of fattening. To what extent the purchase price of the feeder cattle consists of cumulative interest charges on investment during the period of growth is not known.

require that such rents be included as costs. But since many of the producers own their land, the problem cannot be escaped. Theoretically, the proper thing would be to allow interest on the actual cost of the land, to the owner. Actually, we do not know the cost and are left to scale down the valuation in some arbitrary manner. Would it not be better, therefore, to eliminate all rental charges than to include excessive charges which can be only arbitrarily reduced? As regards the 1922 comparison this could be done, since rental is separable from other items; but not so with respect to the earlier comparison. Even when accomplished, however, this would be merely a case of flying from one extreme to another. The balance seems to lie in favor of including rental but of making some rough allowance for overvaluation: how much allowance, the available data are not sufficient to show.

Excluding interest on cattle investment, but including interest on land, improvements, and equipment, the costs of production of grass-fed cattle in Argentina and the United States in 1922 would be, on the basis of the foregoing data, $3.84 and $4.65 a hundred, respectively. This makes a difference of 81 cents a hundred in favor of Argentina. But of the Argentine cost $3.08 is rent. If this were cut in half, on the theory that it exaggerates the true costs incurred by most producers even in 1922 and still more at the present time after the decline which has since occurred in land values, the difference in costs would then be $2.35. This, however, can scarcely be called cost-finding. Nor would it suffice even if accepted as a rough measure of comparative costs. For it is the difference in costs of dressed beef that is sought, and in the absence of definite data as to relative dressing costs and receipts from by-products there is no means of deriving this.

V. CONCLUSIONS

What, then, does the foregoing analysis of costs really show? On the positive side it tends to bear out what is already sufficiently apparent from a broad comparison of conditions of production in the two countries; namely, that upon the whole beef can be produced much more cheaply in Argentina than in the United States. Its greatest significance is, however, negative. For it indicates that in the very nature of the case it is impossible to arrive at any definite and trustworthy conclusion as to the difference between the costs of production in the two countries. The wide variations of cost amongst different regions, different states, different ranches or farms in the same locality, and different systems of management, as evidenced by the domestic data, make the determination of the cost to be used for tariff purposes a matter of very wide discretion. And for both countries the costs available are so meager, so out-of-date, so largely composed of mere estimates, or so distorted and uncertain as the result of the inclusion of improper, or at least doubtful, charges, that there is little chance for the exercise of reason in the determination of costs that are representative and genuine.

APPENDIX B

STATISTICAL TABLES

I. Comparative Prices of Best Butcher Cattle, Toronto, and Native Beef Steers, Chicago, 1910–25*

(In dollars a hundred pounds, live weight)

Month	1910		1911		1912		1913	
	Canada	U. S.	Canada	U. S.	Canada	U. S.	Canada	U. S.
January	5.52	6.20	5.88	6.16	6.48	6.85	6.50	7.80
February	5.65	6.35	5.91	6.15	6.29	6.60	6.44	8.25
March	5.65	7.35	5.82	6.20	6.78	7.20	6.56	8.30
April	5.65	7.55	5.86	6.10	6.75	7.65	6.82	8.15
May	6.12	7.50	5.75	5.95	7.29	7.95	6.83	8.00
June	7.00	7.50	6.04	6.05	7.78	8.00	6.85	8.15
July	6.92	7.10	5.82	6.30	7.54	7.90	6.66	8.25
August	6.55	6.85	5.92	6.95	6.94	8.50	6.42	8.30
September	6.45	6.80	5.92	6.80	6.64	8.15	6.69	8.50
October	6.32	6.60	5.84	6.75	6.16	7.90	7.34	8.40
November	6.12	6.20	5.88	6.70	6.10	8.10	7.51	8.25
December	5.85	6.00	6.33	6.65	6.39	7.85	8.34	8.20

Month	1914		1915		1916		1917	
	Canada	U. S.	Canada	U. S.	Canada	U. S.	Canada	U. S.
January	8.69	8.45	7.89	8.05	7.92	8.35	9.44	10.15
February	8.29	8.30	7.67	7.50	7.88	8.35	10.22	10.50
March	8.14	8.35	7.58	7.65	8.13	8.75	10.97	11.25
April	7.99	8.50	7.61	7.70	8.45	9.10	11.28	11.75
May	8.34	8.40	8.10	8.35	9.12	9.50	11.62	11.90
June	8.29	8.60	8.29	8.80	9.91	9.85	11.41	12.15
July	8.45	8.80	8.62	9.20	8.94	9.25	11.40	12.35
August	8.56	9.10	8.44	9.05	8.22	9.45	11.98	12.70
September	8.72	9.35	8.03	8.95	8.02	9.40	11.42	13.10
October	8.23	9.05	7.81	8.80	7.88	9.75	11.25	11.70
November	8.05	8.60	7.90	8.70	7.88	10.15	11.38	11.10
December	7.81	8.35	7.96	8.45	8.70	10.00	11.68	11.40

COMPARATIVE PRICES OF CATTLE AT TORONTO AND CHICAGO — (*Continued*)

Month	1918		1919		1920		1921	
	Canada	U. S.	Canada	U. S.	Canada	U. S.	Canada	U. S.
January	11.68	12.10	12.09	15.80	10.29	13.95	8.94	8.70
February	11.43	12.00	11.19	15.95	10.34	13.05	7.93	8.20
March	11.85	12.60	11.25	16.05	10.84	13.10	7.90	9.05
April	13.02	14.70	11.60	15.85	11.10	12.30	8.29	8.15
May	14.26	15.40	11.50	15.00	12.20	12.25	8.63	8.25
June	14.10	15.85	11.56	13.55	12.74	14.95	7.80	8.00
July	13.20	16.05	11.50	15.60	12.97	15.00	6.39	8.10
August	13.44	15.75	11.70	16.45	11.10	14.85	6.23	8.50
September	13.50	16.00	11.75	15.50	12.76	15.05	5.84	8.00
October	12.31	14.80	11.50	16.15	11.41	14.20	5.58	8.10
November	12.12	15.05	11.48	15.10	10.05	12.00	5.49	7.40
December	13.15	14.90	11.31	14.35	9.28	10.10	5.46	7.00

Month	1922		1923		1924		1925	
	Canada	U. S.	Canada	U. S.	Canada	U. S.	Canada	U. S.
January	6.58	7.05	6.55	9.15	6.69	9.45	6.50	9.10
February	6.86	7.45	6.38	8.85	6.75	9.30	6.75	9.35
March	6.78	8.00	6.41	8.85	6.88	9.55	7.50	10.25
April	7.68	7.95	6.25	9.00	7.13	9.95	7.63	10.20
May	7.90	8.30	7.25	9.50	7.54	9.65	7.63	10.05
June	8.28	8.95	8.00	10.00	7.25	9.35	7.50	10.75
July	7.89	9.50	7.60	9.65	7.00	9.45	7.48	12.05
August	7.02	9.65	7.09	10.65	6.63	9.60	7.63	12.10
September	6.75	10.20	6.95	10.20	6.50	9.70	7.25	11.70
October	6.41	10.65	6.75	10.15	6.25	10.30	6.98	11.20
November	6.06	9.85	6.25	9.70	6.05	9.75	7.00	10.15
December	6.52	9.20	6.25	9.50	6.65	9.20	7.17	9.75

* Canadian prices derived from "Prices and Price Indexes," Canada, Dominion Bureau of Statistics. Converted at current exchange from January, 1920, through July, 1922. Domestic prices from Chicago *Daily Drovers Journal Yearbook.*

II. Comparison of Canadian and Domestic Cattle Prices, by Months 1920–1925*
(In dollars a hundred pounds, live weight)

Month	Heavy steers		Medium steers		Light steers		Fat cows and heifers		Cutters and canners		Stockers and feeders	
	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]
1920												
Jan.	$12.27	$15.72	$10.79	$12.70	$ 9.90	$11.20	$ 8.96	$ 9.30	$ 5.34	$ 6.30	$ 7.53	$ 9.95
Feb.	11.53	14.43	9.89	11.65	9.02	10.25	8.38	8.75	5.06	5.50	7.42	9.20
Mar.	12.28	13.92	10.16	12.20	9.78	11.50	9.00	9.50	5.30	5.60	8.26	10.00
Apr.	13.05	13.37	11.50	12.18	10.87	11.55	9.65	9.80	5.53	5.45	8.19	[c]
May	13.64	12.80	12.29	12.05	11.50	11.70	10.32	9.80	5.48	6.05	8.61	10.00
June	13.58	15.73	12.04	14.65	11.70	14.00	10.98	10.00	5.20	5.50	7.69	9.40
July	13.99	15.93	12.01	14.45	11.40	13.45	9.88	9.05	4.08	4.90	6.47	8.80
Aug.	12.44	15.93	10.48	13.60	9.66	12.55	8.94	8.65	3.84	4.80	5.88	8.30
Sept.	12.38	16.80	9.51	13.55	8.86	12.25	8.33	7.85	4.19	4.75	6.08	8.85
Oct.	12.14	16.02	8.65	12.30	8.03	11.10	7.34	6.95	4.54	4.25	5.67	8.85
Nov.	9.79	14.25	8.17	11.00	6.82	10.05	6.85	6.65	3.91	3.85	5.23	8.10
Dec.	9.32	12.22	7.87	9.70	6.94	8.90	6.52	6.00	3.13	3.65	4.72	7.10
1921												
Jan.	8.59	9.67	7.52	8.60	6.74	7.90	6.32	6.25	3.29	3.70	4.83	7.20
Feb.	8.26	8.93	7.23	8.10	6.35	7.50	5.74	5.85	3.13	3.25	4.62	6.80
Mar.	9.06	9.83	7.85	9.10	7.26	8.40	6.49	6.65	2.96	3.65	5.34	8.10
Apr.	8.83	8.50	7.82	7.95	7.28	7.65	6.62	6.25	2.73	3.00	5.00	7.40
May	8.46	8.47	7.60	7.90	7.30	7.75	6.57	6.05	2.64	3.10	5.07	7.35
June	7.27	8.15	6.60	7.75	6.34	7.55	5.59	5.05	1.59	2.20	3.66	6.10
July	6.55	8.28	5.44	7.65	5.39	7.40	4.52	5.40	1.63	2.75	2.71	6.10
Aug.	6.81	9.08	5.78	7.50	4.91	6.90	4.28	5.10	1.50	2.50	2.79	5.90
Sept.	6.64	8.22	5.47	7.30	4.83	6.90	4.16	4.60	1.74	2.75	2.84	5.50
Oct.	5.98	8.48	4.96	7.35	4.27	6.75	3.83	4.80	1.94	2.95	2.84	5.65
Nov.	5.84	7.72	4.65	6.60	4.14	5.90	3.83	4.30	1.87	2.55	2.86	5.45
Dec.	7.05	7.47	5.45	6.40	5.32	5.70	4.45	4.50	2.30	2.30	3.21	5.75

COMPARISON OF CANADIAN AND DOMESTIC CATTLE PRICES — (*Continued*)

Month	Heavy steers		Medium steers		Light steers		Fat cows and heifers		Cutters and canners		Stockers and feeders	
	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]
1922												
Jan.....	$ 7.18	$ 7.63	$ 5.87	$ 6.70	$ 5.57	$ 6.15	$ 4.63	$ 4.65	$ 2.30	$ 2.75	$ 3.18	$ 5.90
Feb.....	7.34	8.02	6.31	7.20	5.79	6.80	4.84	4.70	2.14	2.90	3.21	6.65
Mar.....	7.63	8.40	6.68	7.65	6.27	7.30	5.34	5.50	1.79	3.30	3.68	6.85
Apr.....	7.75	8.37	7.08	7.50	6.76	7.25	5.70	6.10	1.32	3.65	3.98	7.35
May.....	8.49	8.55	7.58	8.05	7.49	7.80	6.41	6.75	1.48	3.65	4.43	7.35
June.....	8.60	9.20	7.77	8.70	7.48	8.40	6.12	6.40	1.72	3.10	3.74	6.90
July.....	8.09	9.92	7.10	9.20	6.77	8.75	5.76	6.60	1.73	3.20	3.47	6.20
Aug.....	7.26	10.15	6.47	9.30	5.87	8.85	5.15	6.30	1.51	2.95	3.39	6.65
Sept.....	7.42	10.83	6.10	9.65	5.84	8.90	4.84	6.10	1.89	3.10	3.42	6.75
Oct.....	6.97	11.63	5.56	9.40	5.20	8.90	4.49	5.35	1.97	3.10	3.23	6.70
Nov.....	5.52	11.02	4.96	8.80	4.76	8.45	4.00	4.90	2.03	3.10	3.04	6.30
Dec.....	6.61	10.22	5.89	8.76	5.82	8.40	4.68	5.10	2.12	3.10	3.20	6.30
1923												
Jan.....	7.47	9.98	6.12	8.80	5.83	8.55	4.95	5.40	2.04	3.15	3.64	6.90
Feb.....	7.55	9.48	6.19	8.60	5.87	8.15	5.05	5.65	2.01	3.40	3.60	7.10
Mar.....	7.55	9.30	5.91	8.80	5.92	8.30	4.82	6.25	1.85	3.60	3.88	7.25
Apr.....	7.81	9.42	6.56	8.95	6.36	8.40	5.59	6.55	1.83	3.60	4.18	7.10
May.....	8.17	10.00	7.10	9.40	7.02	8.90	5.90	6.90	1.95	3.75	4.51	7.55
June.....	8.43	10.58	7.48	9.80	7.19	9.15	6.20	6.55	1.99	2.85	3.95	6.75
July.....	7.97	10.68	6.95	9.55	6.85	9.10	5.71	6.20	1.93	2.95	3.56	5.85
Aug.....	7.27	11.48	6.37	10.15	5.89	9.55	4.99	5.60	1.65	2.90	3.31	6.10
Sept.....	7.57	10.98	6.24	9.65	5.76	9.60	4.87	5.75	1.69	3.00	3.51	6.45
Oct.....	6.54	10.80	5.70	9.85	5.22	9.80	4.48	5.45	1.62	2.85	3.08	6.00
Nov.....	6.12	9.92	5.10	9.50	4.83	9.35	4.23	5.30	1.65	2.75	2.94	5.95
Dec.....	6.72	9.95	5.78	9.50	5.36	9.10	4.43	5.50	1.47	2.75	3.06	6.00

COMPARISON OF CANADIAN AND DOMESTIC CATTLE PRICES — *(Continued)*

Month	Heavy steers		Medium steers		Light steers		Fat cows and heifers		Cutters and canners		Stockers and feeders	
	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]	Canada[a]	U. S.[b]
1924												
Jan.	$ 7.40	$ 9.85	$ 6.11	$ 9.20	$ 5.55	$ 8.60	$ 4.87	$ 5.50	$ 1.39	$ 2.90	$ 3.42	$ 6.15
Feb.	7.62	9.98	6.12	9.05	5.84	8.20	4.88	5.55	1.54	3.00	3.24	6.25
Mar.	7.47	10.43	6.45	9.20	6.04	8.35	5.16	6.05	1.48	3.20	3.65	6.80
Apr.	7.86	10.87	6.68	9.70	6.44	8.85	5.62	6.65	1.76	3.20	3.93	7.00
May	7.84	10.57	6.83	9.35	6.69	8.75	5.94	6.80	1.49	3.25	3.97	7.45
June	7.62	10.15	6.72	9.20	6.51	8.55	5.70	5.20	1.84	3.00	3.37	6.75
July	7.21	10.08	6.35	9.40	6.20	8.90	5.17	6.05	1.71	2.95	3.14	6.25
Aug.	7.22	9.95	6.10	9.40	5.72	9.20	4.70	5.65	1.77	2.75	3.12	5.95
Sept.	6.38	9.53	5.64	9.55	5.28	9.50	4.27	5.40	1.67	2.85	3.14	6.10
Oct.	6.36	9.63	5.28	9.85	4.93	10.05	4.26	5.00	1.60	2.95	3.15	6.20
Nov.	6.51	9.33	5.07	9.65	4.70	9.85	4.02	4.75	1.89	3.00	2.81	5.75
Dec.	7.04	9.40	5.79	9.20	5.57	9.20	4.74	4.50	2.10	2.80	3.03	5.55
1925												
Jan.	7.67	9.85	6.40	8.85	5.96	8.50	4.92	5.25	2.22	2.95	3.43	6.35
Feb.	7.74	9.95	6.54	9.05	6.17	8.45	5.11	5.65	2.25	3.25	3.62	6.80
Mar.	7.94	10.48	7.07	9.80	6.62	9.40	5.78	6.65	2.32	3.45	4.18	7.45
Apr.	7.92	10.48	7.16	9.90	7.04	9.75	5.94	7.35	2.65	3.30	4.40	6.95
May	7.72	10.28	7.16	9.95	7.04	9.75	6.02	7.40	2.47	3.65	4.38	6.90
June	8.01	10.88	7.26	10.45	7.13	10.30	5.98	7.00	2.19	3.25	3.75	6.30
July	7.93	12.65	7.88	11.05	6.50	10.60	5.47	6.90	2.28	3.25	3.23	6.35
Aug.	7.99	12.90	6.81	10.95	6.24	10.45	5.16	6.20	2.23	3.25	3.40	6.65
Sept.	7.35	12.68	6.22	10.85	5.86	10.40	4.86	5.90	2.29	3.25	3.50	6.60
Oct.	7.67	13.05	6.10	10.45	5.50	10.35	4.73	5.50	2.28	3.40	3.70	7.00
Nov.	7.18	11.32	5.98	9.65	5.55	9.45	4.88	5.70	2.52	3.65	3.76	6.90
Dec.	8.30	10.85	6.36	9.40	5.73	9.20	5.13	6.00	2.35	3.85	3.99	7.30

* Sources: U. S. prices, Chicago *Daily Drovers Journal*. Canadian prices, Monthly Bulletin of Agricultural Statistics, Dominion Bureau of Statistics, Canada. Quotations based on Toronto and Chicago, respectively, except Canadian stockers and feeders, which are based on Winnipeg. Canadian prices are converted at current exchange rates through July, 1922.

[a] Heavy steers, listed as heavy finished; medium, 1,000 to 1,200 pounds, good and common averaged; light, 700 to 1,000 pounds, good and common, averaged; fat cows and heifers, all grades averaged; canners and cutters, average; stockers and feeders, all grades averaged.

[b] Heavy steers, 1,200–1,900 pounds; medium, 1,050–1,200 pounds; light, 750–1,050 pounds; remaining classes listed based, respectively, on average of all grades.

[c] Practically no sales were recorded in April, 1920, due to railroad strike.

III. Comparative Prices of Good Western Dressed Beef, New York, and Argentine Chilled Hindquarters, London, 1909–25*

(In cents per pound. Foreign prices converted at par of exchange through 1911, at current exchange thereafter)

Month	1909		1910		1911	
	Good western dressed—New York	Argentine chilled hindquarters—London	Good western dressed—New York	Argentine chilled hindquarters—London	Good western dressed—New York	Argentine chilled hindquarters—London
January	9.68	10.01	9.45	9.00	9.34	9.00
February	9.56	9.51	8.97	9.38	9.53	8.43
March	9.56	8.87	10.81	9.32	9.12	9.43
April	9.44	8.51	11.50	9.76	9.35	9.19
May	9.78	10.52	11.00	11.15	9.12	9.25
June	9.75	10.52	11.38	10.84	9.25	8.22
July	9.58	10.25	11.10	8.87	9.30	7.86
August	9.62	10.52	11.38	10.52	9.88	7.10
September	9.94	9.94	11.50	9.69	10.20	9.54
October	10.25	8.49	10.90	9.63	10.56	8.17
November	10.12	9.51	9.75	7.85	10.75	8.33
December	10.00	8.62	9.25	8.47	10.15	9.95
Average	9.77	9.61	10.58	9.54	9.71	8.71

Month	1912		1913		1914	
	Good western dressed—New York	Argentine chilled hindquarters—London	Good western dressed—New York	Argentine chilled hindquarters—London	Good western dressed—New York	Argentine chilled hindquarters—London
January	10.12	10.27	11.88	8.88	12.62	10.76
February	10.00	10.35	11.50	10.41	12.69	10.75
March	10.00	10.09	12.15	10.41	12.75	10.70
April	10.56	10.34	12.94	10.76	12.44	10.09
May	11.62	11.47	12.40	9.12	12.75	11.95
June	12.20	9.97	12.62	10.01	12.81	11.32
July	12.50	9.90	12.75	11.41	13.56	12.53
August	12.65	10.53	12.75	10.70	14.55	14.52
September	12.75	10.13	13.00	10.62	14.31	15.10
October	12.75	9.87	12.94	11.13	14.50	13.82
November	12.65	9.03	12.75	10.87	14.25	13.47
December	12.31	10.48	12.75	11.01	13.50	14.26
Average	11.68	10.20	12.54	10.44	13.39	12.44

* Source of data: U. S. Department of Agriculture, Bureau of Agricultural Economics, Report No. F. S. 29, *The Cattle Crisis in Argentina* (April, 1924), by George B. L. Arner: Tables XIV and XVIII. Subsequent figures furnished by the Bureau of Agricultural Economics.

COMPARATIVE PRICES OF BEEF AT NEW YORK AND LONDON —(*Continued*)

Month	1915		1916		1917	
	Good western dressed—New York	Argentine chilled hind-quarters—London	Good western dressed—New York	Argentine chilled hind-quarters—London	Good western dressed—New York	Argentine chilled hind-quarters—London
January	12.50	15.07	12.00	17.32	13.65	21.31
February	11.12	15.44	11.10	15.80	14.62	23.90
March	11.38	13.76	12.25	16.73	14.84	23.77
April	11.38	15.36	13.25	18.98	15.94	22.30
May	11.90	16.91	14.42	21.81	16.24	24.08
June	12.00	17.80	15.19	20.82	16.59	27.29
July	13.45	17.31	14.88	18.82	17.43	26.50
August	14.00	18.14	14.60	20.22	18.90	28.07
September	14.50	15.15	14.94	18.83	20.35	23.77
October	14.00	16.23	14.75	18.58	19.33	23.27
November	13.50	15.02	13.75	17.41	18.89	22.77
December	12.38	15.35	13.81	20.65	18.58	22.77
Average	12.68	15.96	13.74	18.83	17.11	24.15

Month	1918		1919		1920	
	Good western dressed—New York	Argentine chilled hind-quarters—London	Good western dressed—New York	Argentine chilled hind-quarters—London	Good western dressed—New York	Argentine chilled hind-quarters—London
January	17.90	22.77	25.13	31.47	21.28	20.64
February	17.55	22.77	25.16	31.47	18.58	16.53
March	17.89	26.42	24.81	28.09	19.64	18.07
April	21.41	27.49	24.43	27.37	21.94	19.06
May	23.58	27.49	23.26	24.43	19.00	19.25
June	25.39	27.48	18.83	24.26	24.82	19.74
July	24.20	27.48	20.96	22.47	24.94	19.26
August	25.21	27.50	22.05	21.14	23.78	18.10
September	26.53	27.99	21.28	20.68	23.66	17.56
October	25.04	31.45	23.58	22.61	22.00	17.36
November	25.91	[a]	23.60	22.96	21.08	17.36
December	23.88	31.47	20.61	21.20	18.20	17.46
Average	22.87	27.30	22.81	24.85	21.58	18.37

[a] Not available.

COMPARATIVE PRICES OF BEEF AT NEW YORK AND LONDON —(*Continued*)

Month	1921		1922		1923	
	Good western dressed—New York	Argentine chilled hind-quarters—London	Good western dressed—New York	Argentine chilled hind-quarters—London	Good western dressed—New York	Argentine chilled hind-quarters—London
January	17.36	18.78	14.06	12.65	15.14	14.55
February	14.45	19.36	13.12	11.02	14.32	12.46
March	17.08	19.89	13.62	11.49	13.96	11.27
April	17.04	19.24	13.60	14.94	14.46	12.24
May	15.64	17.19	14.34	13.89	15.69	12.89
June	15.56	15.87	14.08	13.81	16.60	13.84
July	15.25	16.46	16.31	12.97	17.61	16.23
August	15.85	17.21	16.00	13.84	17.98	12.26
September	15.34	15.32	17.19	14.77	18.64	13.72
October	15.05	12.91	16.75	12.80	17.09	12.37
November	14.34	14.22	16.06	12.64	15.85	11.78
December	14.92	15.46	15.63	14.21	16.50	11.96
Average	15.66	16.83	15.06	13.25	16.15	12.96

Month	1924		1925	
	Good western dressed—New York	Argentine chilled hind-quarters—London	Good western dressed—New York	Argentine chilled hind-quarters—London
January	16.68	10.54	14.88	15.81
February	15.90	12.60	14.16	14.79
March	16.06	10.40	15.88	15.24
April	17.15	13.89	16.79	14.59
May	16.94	13.91	16.34	14.57
June	15.60	10.71	16.40	15.70
July	15.39	11.27	18.28	17.27
August	16.19	12.89	17.70	17.05
September	16.42	14.07	19.30	16.22
October	16.26	13.61	[b]18.59	15.95
November	15.92	15.43	[b]16.66	14.55
December	15.82	14.73	[b]16.86	14.00
Average	16.19	12.83	16.82	15.48

[b] Average of two grades: steers weighing 700 lbs. or over, and steers weighing under 700 lbs.

IV. Comparative Prices of Native Beef Steers, Chicago, and Chilled Beef Steers, Buenos Aires, 1909–1925*

(In dollars per hundred pounds. Foreign prices converted at par of exchange through 1911, at current exchange thereafter)

Month	1909		1910		1911	
	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires
January	6.05	3.00	6.40	3.34	6.15	3.57
February	5.90	3.03	6.75	3.30	6.15	3.61
March	6.15	3.07	7.55	3.61	6.20	3.84
April	6.05	3.00	7.65	3.61	6.10	3.81
May	6.50	3.07	7.50	3.54	5.95	3.84
June	6.40	3.20	7.40	3.64	5.85	3.95
July	6.45	3.41	7.20	3.71	6.25	4.15
August	6.50	3.64	6.90	3.98	6.85	4.18
September	6.75	3.95	7.10	4.28	6.70	4.21
October	6.50	4.38	6.80	4.62	6.80	4.18
November	6.35	4.21	6.15	4.32	7.25	4.01
December	6.25	3.81	6.00	3.47	7.15	3.47
Average	6.32	3.48	6.95	3.78	6.45	3.90

Month	1912		1913		1914	
	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires
January	7.30	3.58	7.85	4.22	8.35	4.96
February	7.10	3.78	8.10	4.19	8.30	5.27
March	7.70	3.62	8.35	4.44	8.35	5.47
April	7.70	3.73	8.30	4.93	8.50	5.69
May	8.15	3.72	8.20	5.26	8.40	5.47
June	8.25	3.71	8.30	5.02	8.65	5.67
July	8.30	3.71	8.45	5.10	8.90	5.73
August	8.85	4.05	8.40	5.12	9.25	6.01
September	8.50	4.15	8.45	5.12	9.45	6.21
October	8.25	4.15	8.40	5.22	9.20	6.29
November	8.60	4.15	8.40	5.35	8.80	5.86
December	8.05	4.08	8.30	5.18	8.50	5.80
Average	8.06	3.87	8.29	4.93	8.72	5.70

* Source of data: U. S. Department of Agriculture, Bureau of Agricultural Economics, Report No. F. S. 29, *The Cattle Crisis in Argentina* (April, 1924), by George B. L. Arner: Tables VII and X. Subsequent data furnished by the Bureau.

COMPARATIVE PRICES OF CATTLE AT CHICAGO AND BUENOS AIRES — (*Continued*)

Month	1915		1916		1917	
	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires
January	8.25	5.72	8.60	6.93	10.40	6.69
February	7.80	5.61	8.65	7.15	11.05	6.56
March	7.85	5.56	9.00	6.91	11.65	6.49
April	7.85	5.65	9.25	6.93	12.00	6.31
May	8.35	5.44	9.50	6.84	12.25	6.46
June	8.80	5.54	9.75	6.31	12.50	6.34
July	8.95	5.97	9.30	6.42	12.80	6.37
August	8.80	6.71	9.50	6.54	13.40	6.40
September	8.75	7.45	9.40	6.84	14.25	6.16
October	8.60	7.52	9.70	7.16	13.25	6.54
November	8.50	7.11	10.20	6.95	12.40	6.03
December	8.40	6.59	9.90	6.74	11.85	5.55
Average	8.41	6.24	9.40	6.81	12.32	6.32

Month	1918		1919		1920	
	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires
January	12.60	5.39	16.55	7.96	14.50	7.96
February	12.80	5.83	16.80	7.75	12.95	7.97
March	13.00	5.88	17.10	7.74	13.00	8.20
April	15.00	6.06	16.50	7.85	12.75	8.06
May	16.15	6.04	15.75	8.03	12.50	7.88
June	16.75	5.98	14.45	7.21	15.30	7.56
July	16.85	6.21	15.80	8.60	15.35	7.47
August	16.50	7.49	16.50	8.92	14.90	7.42
September	16.75	8.41	15.25	9.63	15.65	7.15
October	15.35	8.49	16.10	9.20	14.60	7.27
November	16.00	8.03	15.00	8.25	12.30	6.28
December	15.85	8.06	14.00	7.72	10.55	5.98
Average	15.30	6.82	15.82	8.24	13.70	7.43

COMPARATIVE PRICES OF CATTLE AT CHICAGO AND BUENOS AIRES — (*Continued*)

Month	1921		1922		1923	
	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires
January	9.15	5.93	7.15	4.68	9.35	3.08
February	8.55	5.95	7.55	4.53	9.05	3.25
March	9.40	5.71	8.05	3.97	9.00	3.82
April	8.30	5.41	7.95	3.30	9.20	4.06
May	8.30	4.40	8.30	3.31	9.70	3.83
June	8.05	4.10	9.00	3.90	10.20	3.56
July	8.05	3.69	9.60	4.41	10.25	3.62
August	8.45	4.12	9.75	4.50	10.90	3.36
September	8.10	4.74	10.30	4.24	10.25	3.82
October	8.10	4.96	10.75	3.84	10.00	4.10
November	7.15	4.90	9.85	3.30	9.40	3.48
December	7.00	4.39	9.30	3.25	9.50	3.23
Average	8.22	4.86	8.96	3.94	9.73	3.60

Month	1924		1925	
	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires	Native beef steers, Chicago, 1,200–1,350 lbs.	Chilled beef steers, Buenos Aires
January	9.35	3.19	9.35	5.54
February	9.40	3.40	9.40	5.54
March	9.75	3.61	10.10	6.20
April	10.40	3.50	10.20	6.20
May	10.10	3.56	10.05	6.51
June	9.75	3.76	10.75	6.48
July	9.65	4.51	11.55	6.54
August	9.55	4.93	11.35	6.72
September	9.30	5.15	11.45	6.91
October	9.45	5.95	11.60	6.27
November	9.05	5.62	10.70	5.66
December	9.10	5.42	10.15	5.32
Average	9.57	4.38	10.55	6.16

V. Money and "Real" Prices of Native Beef Steers, 1,200–1,500 Pounds, Chicago, 1878–1925*

(Prices per 100 pounds)

Year	Actual prices	Wholesale price index	"Real" prices	Year	Actual prices	Wholesale price index	"Real" prices
1878...	$4.40	89	$4.94	1903	$4.90	86	$5.70
1879...	4.70	85	5.53	1904	5.10	86	5.93
1880...	4.75	94	5.05	1905	5.30	86	6.16
1881...	5.25	93	5.65	1906	5.60	89	6.29
1882...	6.25	95	6.58	1907	6.00	94	6.38
1883...	5.60	93	6.02	1908	6.30	90	7.00
1884...	5.90	87	6.78	1909	6.60	97	6.80
1885...	5.35	82	6.52	1910	7.15	101	7.08
1886...	4.75	81	5.86	1911	6.70	93	7.20
1887...	4.20	81	5.19	1912	8.40	99	8.48
1888...	4.70	83	5.66	1913	8.35	100	8.35
1889...	3.90	83	4.70	1914	8.85	98	9.03
1890...	4.15	81	5.12	1915	8.75	101	8.66
1891...	4.50	80	5.62	1916	9.90	127	7.80
1892...	4.25	75	5.67	1917	12.55	177	7.09
1893...	4.60	77	5.97	1918	15.50	194	7.99
1894...	4.30	69	6.23	1919	16.20	206	7.86
1895...	4.60	70	6.57	1920	14.35	226	6.35
1896...	4.20	67	6.27	1921	8.40	147	5.71
1897...	4.55	67	6.79	1922	9.50	149	6.38
1898...	4.85	70	6.93	1923	9.95	154	6.46
1899...	5.50	75	7.33	1924	9.75	150	6.50
1900...	5.30	81	6.54	1925	10.90	159	6.86
1901...	5.45	79	6.90				
1902...	6.75	84	8.04				

* Sources: Actual prices, from the Chicago *Drover's Journal Yearbook*, 1925; Wholesale Price Index, from U. S. Department of Labor, Bureau of Labor Statistics, *Monthly Labor Review*, July, 1925, pp. 46–7; 1925 index figure furnished by the Bureau.

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